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Advanced Machine Work!

"Prepared for students in technical, manual training, and trade schools, and for the apprentice and the machinist in the shop."

instructions, and great illustrations. Modern books are prettier, but they cannot possibly do a better job of teaching.

"Advanced" covers everything you can imagine from basic operation of a micrometer and vernier caliper, to the testing of machine tools for accuracy. You'll learn the different methods of turning tapers and their fitting, detailed instructions on cutting threads, making bolts and nuts, face plates and chucks, mounting work, turning flanges and pulleys, boring, threading, cutting square threads bolts and nuts, cutting multiple threads, knurling, and much more.

You'll learn about drilling jigs, eccentric turning, facing large cylinders, use of steadies and followers, external and internal grinding, and the grinding of piston rings, milling cutters, reamers, and more.

Chapter nine covers planers and their use. Learn to plane keyways, lathe beds, vises, and more.

In learning to use a milling machine you'll groove taps, flute reamers, mill T-slots in a circular table and more.

And there's so much more on everything from gear cutting to making mandrels, taps, twist drills, using indicators, sine bars and more. You'll learn how to make expensive tools that you now buy. You'll even learn how to check the accuracy of lathes, milling machines, drill presses, and lead screws, and even use of optical flats to measure to millionths of an inch!

Just about everything you can imagine in amazing detail. This baby delivers! A bargain! Worth twice the price. I recommend it highly. People rave about it! Order yourself a copy today! 6 x 9 hardcover 800 pages heavily illustrated No. 4236

\$29.95

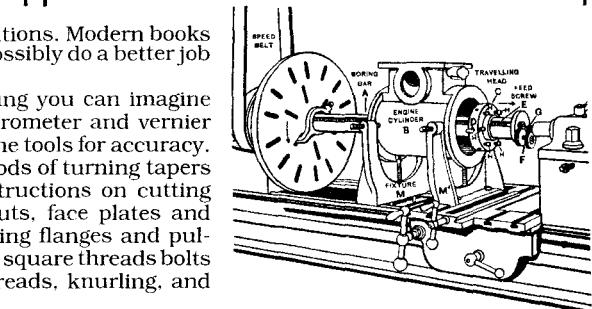


FIG. 12.—BORING ENGINE CYLINDER WITH TRAVELING HEAD
BORING BAR IN ENGINE LATHE.

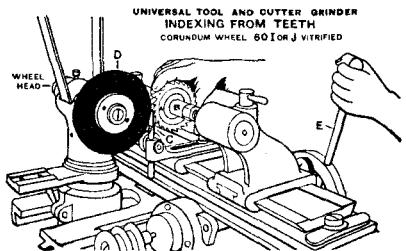


FIG. 19.—GRINDING PLAIN MILLING CUTTER.

A "Damned Fool" Book!

People who have seen this book claim "Anyone who considers himself a machinist and doesn't have a copy of this must be a damned fool!"

(I can identify with that...)

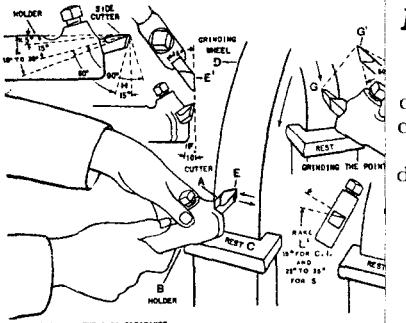


FIG. 66.—GRINDING A SIDE TOOL CUTTER IN HOLDER.

Elements of Machine Work

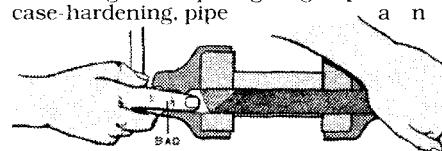
If you have Advanced Machine Work (and if you don't, then why not?), you know how this book is laid out: lots of illustrations and step-by-step instructions. It is nowhere as

large as Advanced, but it does an excellent job on the basic material it presents. A lot of this may be too basic for you, but I'm sure you'll learn something new nonetheless.

So order a copy so that you have both of Smith's classic books. Great material, but you already know that. Get one! 5 1/2 x 8 1/2 hardcover 192 pages No. 21770 \$18.95

have. Confused? I sure am. But that's never stopped me. Just trust me when I tell you that this is the same book mentioned in "Advanced" as the companion tome.

Contents include: materials used for machine construction, measuring, laying out, chipping, tool grinding, files, hand and machine filing, scrapers, scraping and standard surface plates, polishing, annealing, hardening & tempering, high-speed steel, case hardening, pipe



and pipe fittings, hand and machine methods of piping, straightening and bending, peening and riveting, hand drilling, soldering, brazing, babbitting, power transmission, aligning and leveling shafting and installing machines, and more.

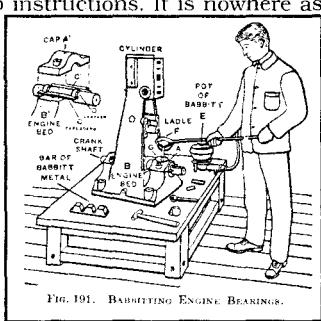


FIG. 191.—BABBITTING ENGINE BEARINGS.

Incredible Machine Shop Reference!

96. To make 14" engine lathe live center, Fig. 68.

FIG. 68.—SCHEDULE DRAWING.

MAKING ENGINE LATHE LIVE CENTER 353

Specifications: Material, machine steel $\frac{1}{8}$ " to 1" large; weight, 1 lb. 9 oz. Hardness, 15 to 18 (sclerometer). High-speed steel, or stellite cutting tools.

Time: Study drawing and schedule in advance, 5 min. — Oil lathe, 4 min. — Make center, 53 min. — Clean lathe, 3 min. — Total, 1 h. 5 min.

SCHEDULE OF OPERATIONS, MACHINES AND TOOLS

OPERATIONS.	MACHINES, SPEEDS, FEES.	TOOLS.
Center. Set live center nearly true and dead center in approximate alignment. Rough square to $\frac{1}{8}$ ", (1), (2).	Engine lathe, 12" to 16".	Dog, holder and cutter 35° rake, calipers, rule.
Recenter. Omit finish square. Turn taper shank .602" to 1", (3).	3d or 4th speed, or 60 F.P.M. Hand or power feed.	Rule, dividers.
Set over footstock to 1568" or $\frac{1}{8}$ ", or use taper attachment. Rough turn taper (3), to $\frac{1}{2}$ " at small end, one or two cuts. Terminate cuts close to dog.	2d or 3d speed, or 40 F.P.M. Medium power feed — 80 to 100 F.P.M.	Holder and cutter 35° rake, calipers, rule.
Take a light trial cut about .004" or .005", (4). To complete this taper, see Schedule of Operations, p. 222.	3d or 4th speed, or 70 F.P.M. Fine power feed — 140 to 170 F.P.M.	Morse taper-ring gauge No. 3, chalk or Prussian blue.
Smooth turn reduced part to $\frac{1}{2}$ ", (5). One cut. Round corner (6).	3d or 4th speed, or 70 F.P.M. Fine power feed — 140 to 170 F.P.M.	Holder and cutter 35° rake, gauge.
Recenter work and set tool at 30°, approximately, with work.	2d or 3d speed, or 50 F.P.M. Medium power feed — 80 to 100 F.P.M.	Center truing tool, file or cutting-off tool, center gage, 1/8" steel centers, hammer.
Rough turn point of center (7), to leave stem (8), as shown, seven or eight cuts.	2d or 3d speed, or 50 F.P.M. Medium power feed — 80 to 100 F.P.M.	
To finish point (8) in live spindle, using center gage, stamp (9).	2d or 3d speed, or 50 F.P.M. Medium power feed — 80 to 100 F.P.M.	

Information: Live centers are usually machine steel. Dead centers are often made fitted to footstock spindle and of a length that when spindle is run back nearly as far as it will go, the center will be forced out. The conical point is hardened and tempered to a straw color and often ground. If a center is made of annealed carbon steel, the cutting speeds may have to be reduced.

ADVANCED MACHINE WORK

by Robert H. Smith
reprinted by Lindsay Publications

Here's the best general machine shop book I've ever seen old or new. Smith brought out this book in 1915, updating it in 1925. That makes it new enough to still be of great value, but old enough to contain many techniques that are no longer taught.

You get easy-to-read text, step-by-step

Companion to Advanced Machine Work

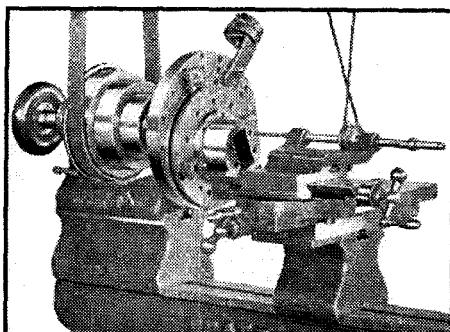
ELEMENTS OF MACHINE WORK
by Robert H. Smith

Here it is, the companion book to Advanced Machine Work (AMW). And it's quite

a nice book even though it covers simpler material than AMW. But first an explanation is in order.

In the preface of our 1919 AMW reprint, Smith mentions *Principles of Machine* as being the companion book. In 1910 that book was entitled

"Elements". That same year, what was then "Principles" was greatly expanded to become "Advanced". We could have reprinted 1910 "Principles" but everything in it was repeated in 1919 "Advanced", so I don't think you'd let me sell you something you already



(above) A grinding operation

Introduction

....Where formerly but few men in the shops were directly interested in... the methods by which the holes in a jig could be accurately located and bored, today there are thousands of toolmakers who are employing refined processes, precision tools and appliances for executing this class of work. Many methods and devices originating in watch factories and similar establishments for accomplishing very accurate results were for a considerable period confined almost exclusively to such institutions...

The master plate, disk, button and refined test indicator processes have been extended from watch-tool to other classes of accurate tool work... Closely allied with these devices... is the compound microscope, which with cross hairs and conveniently arranged micrometer screws constitutes a testing and measuring appliance having an innumerable number of practical applications in connection with the work of the toolmaker.

We have endeavored in the following pages to present, in convenient form, information on various phases of tool work contained in articles published in the past few months in the American Machinist...

There is no branch of tool work more important or more interesting than... these methods, including the use of master plates, buttons, disks, size blocks, etc., have therefore been treated at length, together with processes of making master plates for various purposes, the use of test indicators, accurate gages, the microscope and other appliances...

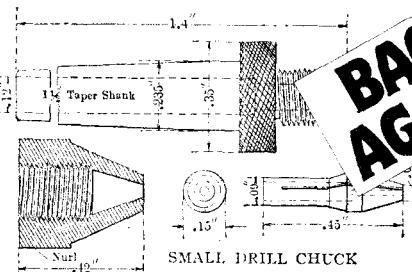


ACCURATE TOOL WORK

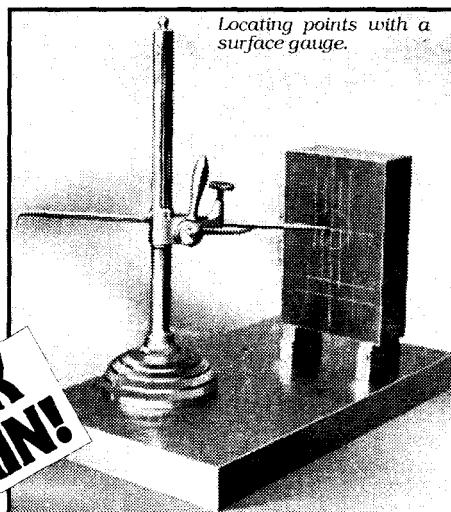
Associated 1951 Works
by Goodrich and Stanley
reprinted by Lindsay Publications

We haven't offered this in a couple of years. We just printed a few more of this gem because so many people still ask for it.

If you're building a solid walnut cabinet to store your hairpiece and your girlie magazines, you don't have to be much more accurate than $1/32"$ with the table saw. But if you want to build a steam engine or a tool grinder, that kind of tolerance just ain't gonna hack it. You'll need precision. And you can learn about precision from turn-of-the-century machinists right here.



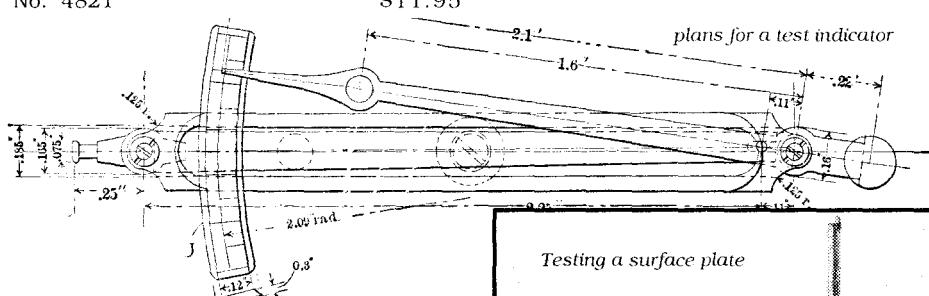
BACK AGAIN!



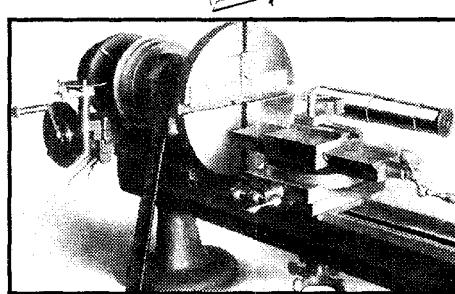
Locating points with a surface gauge.

CONTENTS

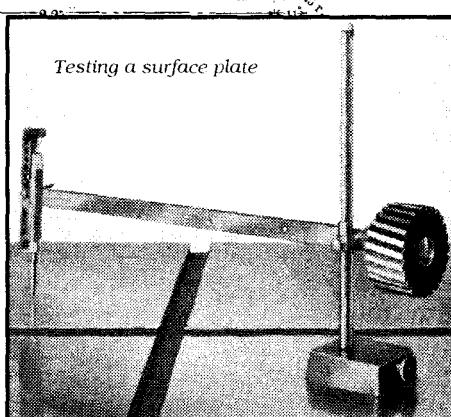
Locating And Boring Holes In Drill Jigs; Locating And Boring Oblique Holes In Jigs; Economical Jig Work On The Milling Machine; Boring Holes On The Miller And Checking With Verniers; A Precision Drilling And Reaming Machine; Master Plates And How They Are Made; Master Plates And Their Uses In Die Making; Master Plates Used In Making Watch Tools; Trigonometry In The Tool Room; A Tool For Laying Out Angles; Measuring Dovetail Slides, Gibs And V's; A Gage For Producing Accurate Tapers; The Microscope In The Tool Room; The Microscope In The Manufacturing Plant; Making A Set Of Accurate Index Dials; Inspecting Tools With The Test Indicator; A Universal Indicator And Some Of Its Applications; A New Swedish Combination Gaging System; Setting, Laying Out And Testing Work With The Swedish Gages



Testing a surface plate



(above) Using a microscope on a bench lathe.



(above) Indicating rear face of a chuck job.

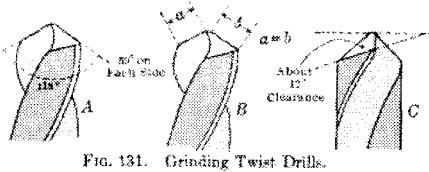


FIG. 131. Grinding Twist Drills.

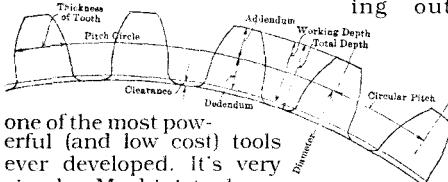
Machinist Math!

MATHEMATICS FOR MACHINISTS

by R W Burnham

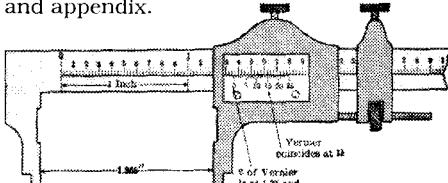
reprinted by Lindsay Publications

As a dedicated user of mathematics, I'm convinced of math's power. If you're not using math, just the simple stuff, on a regular basis, you're missing out.



one of the most powerful (and low cost) tools ever developed. It's very simple. Machinists learn only what they need.

Chapters include: common fractions; decimal fractions; percentage; blueprints; measurements; constructions; powers, square root, significant figures, right-angled triangle; lathe work; threads; thread cutting; planer, shaper, drill press; simple machines; work, power, ratio and proportion, gear ratios, pulleys, belting; gear calculations; milling machine; volume and weight; shop trigonometry; materials and processes; and appendix.



You get great illustrations, simple explanations, and straight-forward problems to work with answers. I'm so familiar with math that I find it hard to believe that some people can bisect a line with a compass. But I'm sure there are. If you're one of them, get this book and learn. It's easy and no one will ever know the difference.

This is useful. Learn to figure gears needed to cut a thread on the lathe. Learn to figure cutting speeds. Find the angle of a taper. Layout the largest possible square in a piece of round stock. Find the horsepower of a steam engine.

Again, this is very basic. If finding the circumference of a circle is a problem for you, get this. It will gently walk you through the most basic math you need. This is for the guy who feels completely lost in the world of math. If that's you, get a copy of this. You'll find it's a lot more than just a white cane! I think you'll find it's not a complicated as many people believe.

I think you should really know much more than what's in this book, but this a great place to start. This excellent book first appeared in 1915, was updated and reissued in 1943, and is now in the public domain and available to us all. If you need the simplest math, I give this a very high recommendation. Think about it. 5x7 softcover 253 pages
No. 21680 \$11.95

THE CARE AND OPERATION OF A LATHE

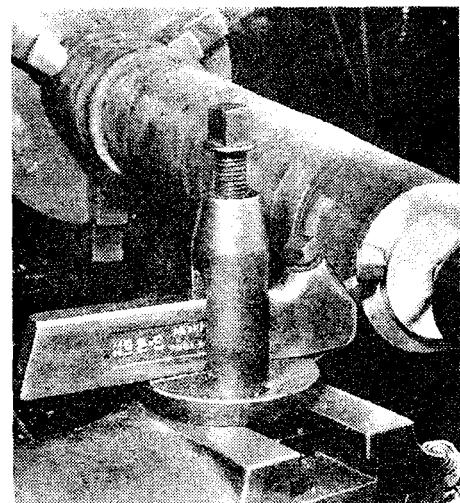
by Sheldon Machine Co, Inc

reprinted by Lindsay Publications

For years the best little lathe handbook available was "How to Run a Lathe" by South Bend Lathe. Not long ago, South Bend apparently decided to get out of the book business by more doubling the price of the book and by refusing to give any reasonable wholesale discount to dealers like me. In my opinion, the handbook became very expensive and lost its appeal overnight.

Now there's another source for the same great information.

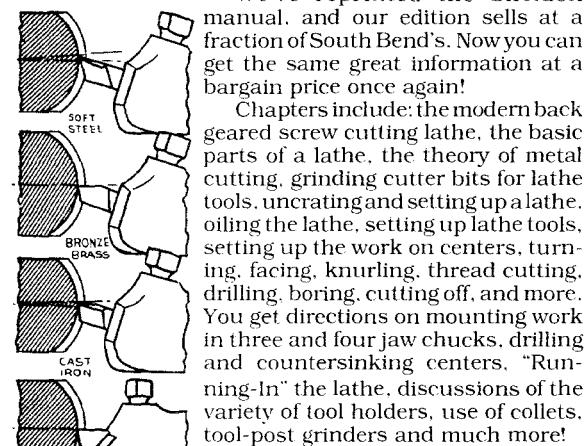
One of South Bend Lathe's competitors in 1942 was Sheldon Machine Co of Chicago. Sheldon saw the value of South Bend's manual and apparently knew it had to publish its own. What resulted was a booklet every bit as good as South Bend's, if not better.



CARE & OPERATION OF A LATHE

Sheldon Machine Co

We've reprinted the Sheldon manual, and our edition sells at a fraction of South Bend's. Now you can get the same great information at a bargain price once again!



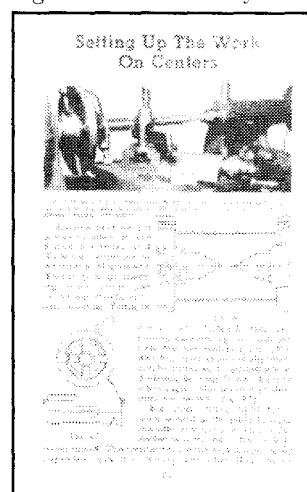
Chapters include: the modern back geared screw cutting lathe, the basic parts of a lathe, the theory of metal cutting, grinding cutter bits for lathe tools, uncrating and setting up a lathe, oiling the lathe, setting up lathe tools, setting up the work on centers, turning, facing, knurling, thread cutting, drilling, boring, cutting off, and more. You get directions on mounting work in three and four jaw chucks, drilling and countersinking centers, "Running-In" the lathe, discussions of the variety of tool holders, use of collets, tool-post grinders and much more!

No doubt, every new Sheldon lathe shipped out included a copy of this little instruction manual. You may not own a Sheldon lathe, but the small Sheldon lathe was a generic machine very much like those of South Bend

and a dozen other manufacturers. You'll find it useful no matter what lathe you use.

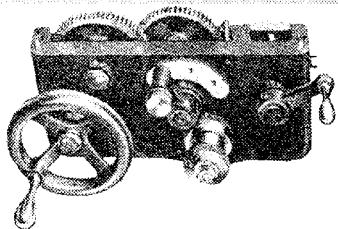
If you're just learning to use a lathe, this manual together with Fred Colvin's book, will certainly get you started. For every question these books answer, ten more questions will pop up, and that's when you start accumulating all the other books in this catalog!

Great book! Great illustrations! Great price! No lathe operator can afford NOT to have a copy of this. A gem of a handbook that should be beside every lathe. Order a copy today!



5 1/2 x 8 1/2 softcover 112 pages
No. 21052

\$7.50



Dave Gingery Comments:

I've taken THE CARE AND OPERATION OF A LATHE to bed with me for the past few nights. I get lots of inquiries from people who have acquired older lathes. Obviously I can't afford to offer detailed answers even though I'd like to. Now all I have to do is to tell them to order this book.

My advice would be to read the book entirely before even turning the machine on. You really should not play with a lathe until you know what is in the pages of this book. Then use it as a training guide as you familiarize yourself with the machine. It will tell you how it's made and how it works, how to set it up, lubricate it and run it safely. Best of all it gives great instruction on tool-grinding and every basic lathe operation. And it displays plenty of detail on accessories so that you can easily make many of your own if you can't justify buying them. It won't be long before you are an able machinist. I'm grateful that such a book is again available.

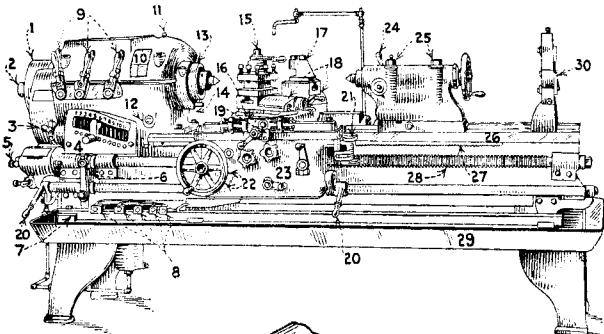
RUNNING AN ENGINE LATHE
by Fred H. Colvin

If you're just starting out using a metal cutting lathe, or you're trying to learn techniques you feel you should have known all along, then grab this. This small, but jam-packed book will show you all the basic techniques of running a lathe.

Thirteen chapters cover the engine lathe, centering lathe work, driving the work, tools and turning, steady and follower rests, faceplate work, chucks and chucking, boring tools, taper turning, cutting screw threads, test indicators and their use, three types of centering mandrels and care of the lathe.

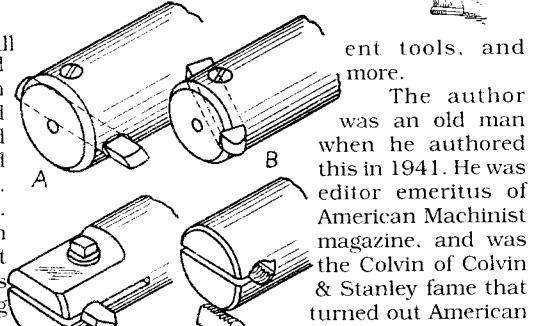
Running an Engine Lathe

"Practical suggestions which will give the young machinist or apprentice the foundation principles of engine lathe work."



You'll learn all about essential operations in easy-to-read and understand text illustrated with simple, clear drawings. You'll learn about different kinds of dogs (not the barking type), split collars, toolholder and bits, work with shoulders, boring the end of a bar, homemade follower rest, saving a poor casting, bridle for faceplate work, slotted chucks for flat work, precision drilling, boring cylinders, ways of figuring tapers, rapid thread cutting, cutting a double or triple thread, cutting Brown & Sharpe worm threads, using dial indicators, and much, much more.

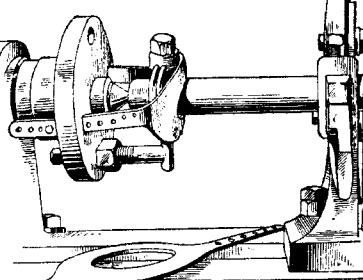
There are many tables describing tapers, V threads, square threads, ACME threads, grinding angles on many differ-



The man was an expert machinist.

Here's a great little book at a great little price that you can't afford not to have, especially if you consider yourself a beginner on a lathe. Excellent book! Bargain price. 5 1/2 X 8 1/2 softcover 117 pages No. 4708

\$6.95



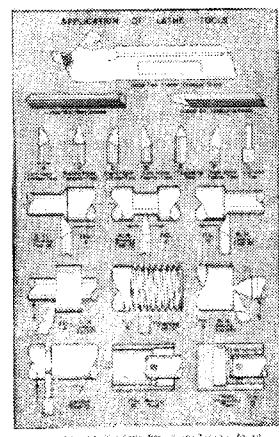
Another Great Book from "Mr. Machinist"

HOW TO RUN A LATHE

by South Bend Lathe Works
reprinted by Lindsay Publications

Finally! Here it is!

South Bend Lathe still produces a modern edition of this book and will sell it to you at a price much, much higher than



ters), chuck work, taper turning and boring, drilling reaming and tapping, cutting screw threads, and special classes of work.

All the basics are here from sharpening drills to you can center drill to "superfinished" turned bearings, grinding valves, and turning multiple screw threads.

Remember, this is an introductory guide that was no doubt shipped with South Bend Lathes back then. Under no circumstances are you going to learn what is covered in "Advanced Machine Work". This will get you going. And if you're just learning to use a lathe, you have to have a copy of this or something very similar. It's the nuts.

Chapter 12
CHUCK WORK

With this chapter you will learn how to make and use chucks for holding workpieces while you are doing your work.

Chapter 13
DRILLING, REAMING, TAPPING, AND TURNING

With this chapter you will learn how to use the various tools for drilling, reaming, tapping, and turning.

Chapter 14
CUTTING SCREW THREADS

With this chapter you will learn how to cut screw threads.

Chapter 15
TAPER TURNING

With this chapter you will learn how to turn tapers.

Chapter 16
BEARING TURNING

With this chapter you will learn how to turn bearings.

Chapter 17
VALVE TURNING

With this chapter you will learn how to turn valves.

Chapter 18
MULTIPLE SCREW THREADS

With this chapter you will learn how to turn multiple screw threads.

Chapter 19
SPECIAL CLASSES OF WORK

With this chapter you will learn how to do special classes of work.

Chapter 20
ADVANCED MACHINE WORK

With this chapter you will learn how to do advanced machine work.

Chapter 21
GENERAL INFORMATION

With this chapter you will learn general information.

Chapter 22
APPENDIX OF LATHE TOOLS

With this chapter you will learn about appendix of lathe tools.

Chapter 23
INDEX

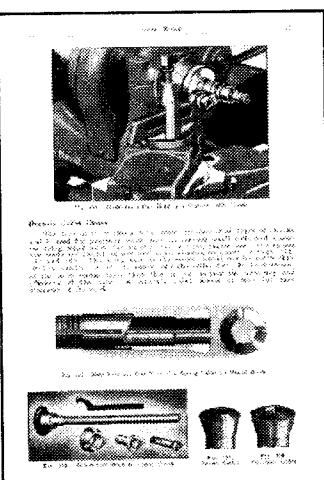
With this chapter you will learn index.

This isn't the current edition. In fact, belt driving the lathe is still covered. But it's completely useful. Great book. Great illustrations. And finally, a great price! Get a copy.

You can't afford not to have one now. 5 1/2 X 8 1/2 softcover 128 pages

No. 21150

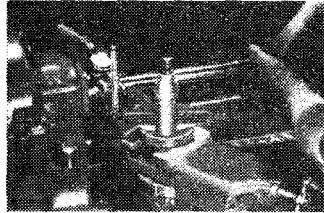
\$7.95



Keep Your Lathe in Trim

KEEP YOUR LATHE IN TRIM
by South Bend Lathe Works
reprinted by Lindsay Publications

The Technical Service Department of South Bend Lathe Works published this, the fourth (and I think the most useful) of four booklets on caring for a lathe in 1943. The copyrights have now



Although more than fifty years old, you'll find not all that much has changed. Some lathes use a flat belt drive from the electric motor. As a result you'll learn how to splice belts and adjust the drive. You'll see how to test a small spindle bearing for clearance and how to adjust the bearing. And you get tips on the saddle gibbs, the graduated collars, the tailstock top set-over, and more.

This certainly won't tell you how to rebuild a lathe, but it WILL show you how to do the routine adjustments necessary to keep a lathe operating like new. Great little booklet. Worth having, as a collectible if nothing else! Get one. 5 1/2 x 8 1/2 softcover 28 pages

No. 21389

\$3.95

South Bend Lathe Catalog!

1934 MODEL

SOUTH BEND LATHES

by South Bend Lathe Works
reprinted by Lindsay Publications Inc

If you wanted to buy a small engine lathe during the Great Depression, you would have searched through this illustrated gem from February 1934.

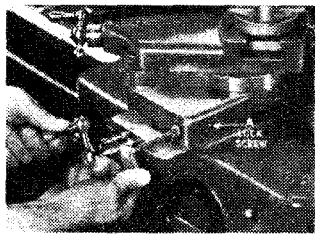
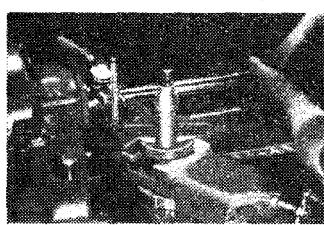
You'll see all kinds of lathes: bench lathes, tool room lathes, toolmaker lathes and more. You get photographs. You get all the specs. You'll also get floored by the prices: a 9" toolmaker lathe with a 2' bed including face plate, change gears and motor for \$138.00.

You'll also see a 36" brake drum lathe, self-centering mandrels, collets, taper and milling attachments, turnstile bed turrets, chucks, dogs, knurling tools, and other accessories.

If you have an old South Bend lathe, dream about finding one, collect tool catalogs, or are just a lathe fanatic, this is a must have. YOU CANNOT ORDER FROM THIS LATHE CATALOG. It is for entertainment purposes only. (Believe it or not, there are always a couple of boneheads who read this catalog who think they can successfully order from a 60

6

Lindsay Publications Inc, PO Box 538, Bradley IL 60915 • 815/935-5353

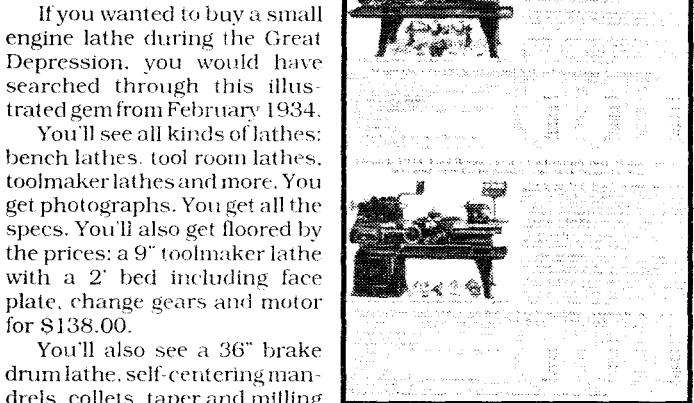


ible if nothing else! Get one. 5 1/2 x 8 1/2 softcover 28 pages

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by South Bend Lathe Works
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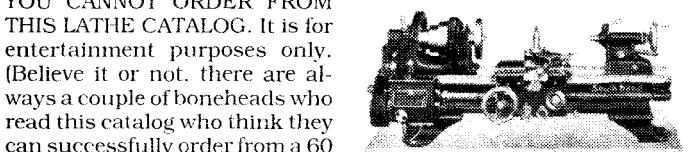


year old reprinted catalog. Don't you be one of them...)

Interesting catalog. Get one. Fun reading. 8 1/2 x 11 softcover 72 pages

No. 21397

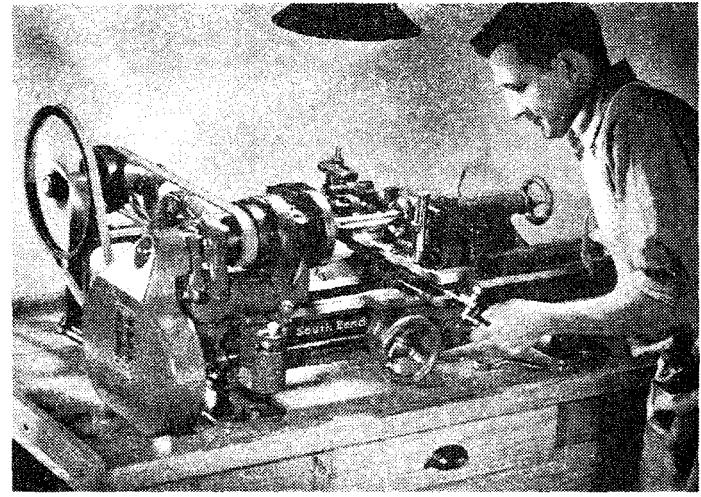
\$7.95



e x -
pired.
so we

reprinted it. I have no idea if such a booklet is still being published.

You'll learn how to "make all necessary adjustments, check power supply, protect lathe from abuse, and keep lathe in best operating condition."



South Bend Lathe Booklets

Eight different
booklets in one
volume!

SOUTH BEND LATHE BOOKLETS

by South Bend Lathe Works
reprinted by Lindsay Publications

In addition to *How to Run a Lathe*, South Bend also published small booklets ranging from eight to twenty-four or more pages, each booklet dedicated to a particular topic. I was able to acquire eight of the most popular 1936 booklets from a customer like you.

To publish each individually would have made them far too expensive. So to keep the price down I took all eight and reprinted them in a single cover.

In one volume you get:

- How to Grind Valves, Sharpen Reamers and Cutters in the Motor Service Machine Shop
- How to True Brake Drums of Automobiles, Buses, and Trucks
- How to Test and True Differentials
- How to Bore Rebabbitted Connecting Rods
- How to Make Bushings
- How to Finish Pistons
- How to Grind Lathe Cutter Bits
- How to Cut Screw Threads in the Lathe

Obviously, South Bend was very much interested in promoting its products, and they knew the best way to do that was to show people how useful a lathe could be. These booklets are of exactly the same style of *How to Run a Lathe* being heavily illustrated with photographs and drawings. The section on cutting screw threads is, obviously, very similar to the chapter in the edition of *"Run a Lathe"* that we reprinted, but certainly not identical. The other booklets present new material.

Great stuff! Excellent illustrations. Fun reading. Useful how-to. This something worth having. Order a copy! 6x9 softcover 96 pages

No. 21583

\$7.95

LATHE DESIGN — Construction and Operation

by Oscar Perrigo

reprinted by Lindsay Publications

We first reprinted this 1916 book over ten years ago, but discontinued it a few years back. We've now reissued it. It may be available for a year or two before we let it disappear again. With paper prices so high these days, these big books are becoming too expensive to print. I make you no promises how long we'll carry this.

Chapters include history of the lathe up to the introduction of screw threads; the development of the lathe since the introduction of screw threads; classification of lathes; lathe design: the bed and its supports; lathe design: the headstock casting, the spindle and the spindle cone; lathe design: the spindle bearings, the back

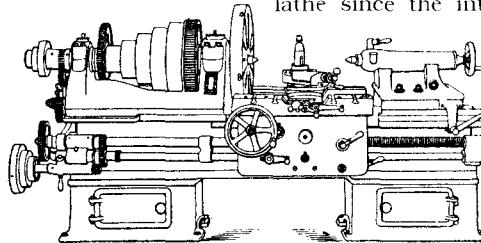


FIG. 241. — 24-inch Swing Engine Lathe built by the R. K. Le Blond Machine Tool Company.

gears and the triple gear mechanism; lathe design: the tail-stock, the carriage, the apron, etc.; lathe design: turning rests, supporting rests, shaft straighteners, etc.; lathe attachments: rapid change gear mechanism; lathe tools.

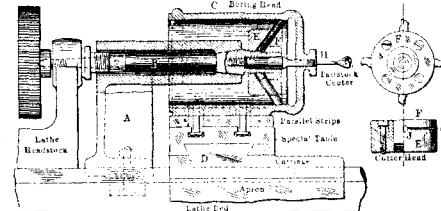


FIG. 217. — Cylinder Boring in the Lathe.

LATHE DESIGN

Design details of 1916 lathes and more...

high-speed steel, speeds and feeds, power for cutting-tools, etc.; testing a lathe; lathe work; engine lathes; heavy lathes; high-speed lathes; special lathes; regular turret lathes; special turret lathes; electrically driven lathes; and practical instructions on lathe operation.

Covering the almost 500 pages are three hundred and forty-one engravings illustrating everything from a modified parabolic lathe bed to a test piece for ascertaining if the head-stock spindle is parallel with the V's. You'll see engravings of various (but far from all) lathes such as the 20 inch swing turret head chucking lathe built by F. E. Reed Company.

This is a great book for lathe fanatics and machinery nuts (couldn't be YOU I'm referring to). Lots of pictures, lots of information on all kinds of lathes, and lots of ideas and useful info. It's a time machine and almost an encyclopedia. Expensive but useful and entertaining. Think carefully about getting a copy. Put it on your charge card. Get a second mortgage. Sell the ol' lady to the gypsies. I don't care. Just get a copy. You'll like it. (Oh, and be sure you tell the gypsies you're selling her as is...) 5 1/2 x 8 1/2 softcover 469 pages

No. 4180

\$24.95

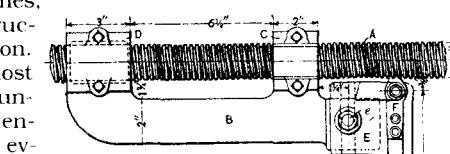


FIG. 200. — Device for Testing Lead Screw Threads.

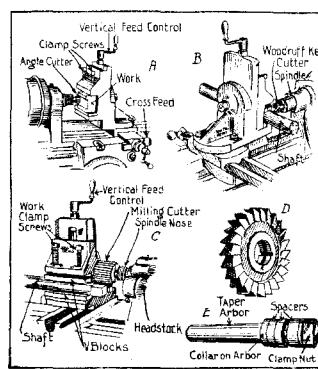


FIG. 324. — The South Bend Milling Attachment and its Use.

\$24.95

Lathe Operations

"Hands-on" Lathe Education!

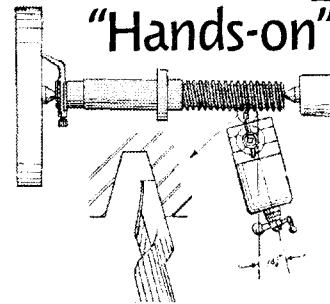


FIG. 4. Set the tool on center so that the cutting edge is exactly parallel with the sloping side of the thread. Take a light cut, barely enough to true up the surface. It is well to use either cutting oil or cutting compound.

LATHE OPERATIONS

by J. W. Barritt

reprinted by Lindsay Publications

If you've seen Shaper Operations or Planer Operations, then you know what this is about.

You get a brief introduction to the lathe, cutting speeds and lubricants, cutting tools and their use, and then you get step-by-step lessons.

You'll learn about grinding centers, aligning tailstock center to a test bar, machining a steel pin, machining a steel shaft, machining a forged steel shaft, machining a forged steel rotor, machining a forged steel gear and spindle, machining a forged steel roll, machining a spot-facing bar (for Morse and Brown & Sharpe Tapers), and Machining a Tool Steel Lathe Center.

After a straight-to-the-point discussion of screw cutting, you'll

learn the secrets of machining a forged steel body-bound bolt, machining a machine steel taper bolt, machining a tool steel screw, machining a machine steel worm, and more. When you're done with these lessons, you'll be able to cut a quadruple 1/4" pitch, 1" lead Brown & Sharpe RH thread, a 4-pitch right hand single Buttress thread, left-hand Whitworth thread, a 29° Acme screw thread, and on and on.

And the lessons continue. Machine a cast-iron hand wheel, a cast-iron gear, worm, cylinder head, a cast steel trunnion, a brass spacing washer, a brass taper sleeve, a cast-iron packing box bushing, and many more.

Within these lessons you'll learn to machine a dovetail surface, ream a taper hole, how to center a casting with a shifted core, how to undercut, how to cut an internal taper thread, how to use a steady rest and pot chuck, machine a crankshaft, and much more.

Here's a machine shop course you can take at your own speed. Combine this with several other quality books from this catalog, and you can become an expert machinist. If this were published today, it would probably cost you at least twice our price. And how much of this has changed since 1937? Zilch.

Get a copy of this. It's quality. You'll like it. Worth having.

8 1/2 x 11 softcover about 176 pages
No. 21109 \$13.95

Fig. 1. Working drawing.

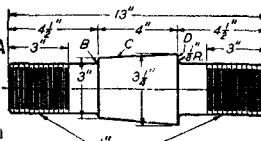


FIG. 1. Working drawing.

to the lathe, cutting speeds and lubricants, cutting tools and their use, and then you get step-by-step lessons.

You'll learn about grinding centers, aligning tailstock center to a test bar, machining a steel pin, machining a steel shaft, machining a forged steel shaft, machining a forged steel rotor, machining a forged steel gear and spindle, machining a forged steel roll, machining a spot-facing bar (for Morse and Brown & Sharpe Tapers), and Machining a Tool Steel Lathe Center.

After a straight-to-the-point discussion of screw cutting, you'll

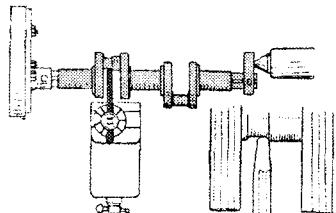
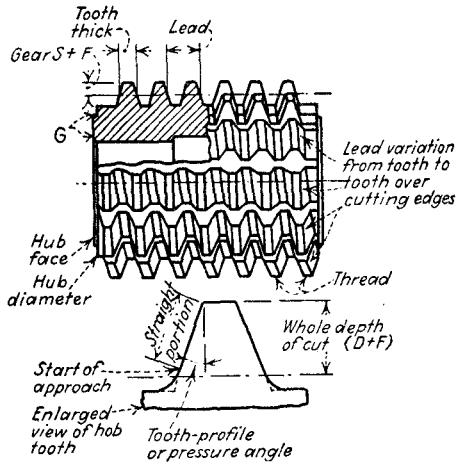


FIG. 5. This is also a slow tedious operation. Due to the long overhang of the tool, it is necessary to take light cuts and light feeds. When setting the tool, place it well under the work, so as to have the maximum support shown. When setting the tool for the overhang, when turning very large shafts, it is customary to brace the end of the tool.

Fifty one detailed, educational projects!



Cut Gears!

GEAR CUTTING PRACTICE

by Colvin & Stanley
reprinted by Lindsay Publications

The high gods of the machine shop, Mr. Colvin and Mr. Stanley, will teach you how to cut gears in this reprint of their 1937 text, subtitled "Methods for Producing Gears for Commercial Use."

Chapters include gear cutting practice, spur gears and circular cutters, shaping method of cutting gears, helical and herringbone gears, hobs and cutters, bevel gears, worms and worm gears, internal gears, heat treatment, burnishing, shaving, lapping and grinding gear teeth and more!

This book was written for industry so there will be a lot of material you can't use. But it's better to get too much info rather than not enough.

You'll get an education in gear geometry, the best alloy compositions to use for gears (in 1937), specs on keyways, using the dividing head, comparison of hobbing versus milling gear teeth, commercial hobbing machines available, vertical shapers designed for cutting gears, details on hobs, their use and sharpening and on and on.

You get charts, tables, nomographs, photographs, drawings, and more. It's heavily illustrated. Again, you'll see a lot of big machinery since this is an industry text. If you cut gears or ever intend to, this reference will teach you something practical even if you only have a 3" lathe with a milling attachment. A standard work by the standard dynamic machine shop duo: Colvin & Stanley. Get a copy!

5 1/2 x 8 1/2 paperback 344 pages
No. 20889 \$14.95

Learn Machine Shop From Henry Ford!

Well, almost...

SHOP THEORY

by Henry Ford Trade School
reprinted by Lindsay Publications Inc

"Eliminating all non-essentials, this book gives you a quick working knowledge of the basic tools, machines, and instruments, and the fundamental operations of machine shop work. It tells you how all the machines and tools used were developed, how they are constructed, and how to operate them. It explains heat treatment and gearing. It includes the mathematics needed for shop work, and stresses safety rules. Every step of machine shop work is pictured clearly both in text and illustration. An industry-developed shop course which already has helped prepare thousands of men for payroll jobs."

This book started out as mimeographed sheets, but so many people wanted copies that the school published the notes as a book. By the time this edition was released more than 150,000 copies had been distributed to schools all over the country. And it no doubt helped win World War II.

This is the entire '42 edition typewritten, loaded with drawings and photographs. Chapters include decimal equivalents, formulas, small tools, rules, micrometers, vernier gages, chisels and chipping, hack saws and sawing, files and filing, soldering, shop review, drills and drilling, tapers, threads, gearing, cutting tools, shaper, planer, lathes, turret lathes, milling machine, gages and gage blocks, heat treatment, abrasives and grinding wheels, grinding machines, and routing of bench tool work.

This is a gem. There are many machine shop books on the market. Although this edition was abandoned by Ford, probably being replaced by something more modern, it is still one of the best books of its type around.

Need a good basic machine shop book? Get this one. You'll like it. 8 1/2 x 11 softcover 267 pages
No. 20064 \$16.95

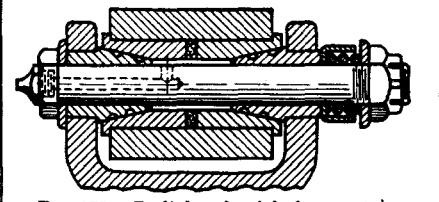


FIG. 155.—Radial and axial play are taken up by the hardened and ground bushings tapered to an included angle of 22½ deg., sufficient to prevent sticking.

Mechanical Design!

Practical 1942 Illustrated How-To

HANDBOOK OF MECHANICAL DESIGN

by Nordenholz, Kerr & Sasso
reprinted by Lindsay Publications Inc

You get a 1942 collection of articles from *Product Engineering* magazine including practical design ideas, variations, bits and pieces, hints and tips, basic formulas, and even electrical information for getting the job done.

Chapters include charts and tables; materials; beams and structures; latches, locks and fastenings; springs; power transmission elements and mechanisms; drives and controls; and design data on production methods.

You get charts and nomographs for calculating the length of material needed for 90° bends in pipe or conduit. Or volumes (in gallons) of horizontal round tanks with flat ends. Or for calculating the weight of a certain number cubic inches of brass (or vice versa). And much more.

You can calculate stress on aluminum sheets, compression members, shear members, diagonal tension webs, hollow girders, and more. You'll learn about springs, their natural frequency, design calculations and more.

You get a picture section illustrating various ideas and variations for locking devices, retaining and locking detents, couplings, clutches, gibs and guides, bearings, change gears, automatic feed hoppers and more.

Explore drives, controls, types of motors and their characteristics from starting to running under full power. You explore various types of three phase motor windings, and more.

Learn production methods for fusion welding, resistance welding, furnace brazing, flame hardening, centrifugal casting, permanent mold casting, die-casting, forging, flame cutting and powdered metal pressings.

Even if you don't build anything, the "pitchers" are "purdy", and you're sure to learn something no matter what page you open the book to. In other words, this is a fun book to browse through. Get one! 8 1/2 x 11 softcover 277 pages
No. 21540 \$19.95

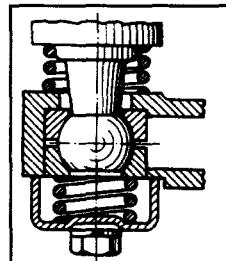
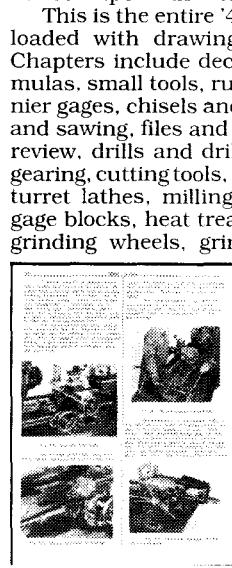


FIG. 159.—Self-adjusting socket joint. The sheet-metal spring cover is held in place by two screws.



METALWORKING

by Paul N. Hasluck

reprinted by

Lindsay Publications Inc

Every metal worker must have a copy this. This is top rate. Full tilt, I've never seen anything quite like it. This 1907 American edition of "Metalworking" has 760 pages and 2,206 illustrations covering just about anything you would want to do to a chunk of metal.

This covers so much I don't know where to begin. Under "foundry" you'll learn about building Faraday's blast furnace, a gas injector furnace, a brick-built furnace, an oil furnace, crucibles, flasks, sands and on and on.

"Smiths' Work" is not about the farrier's trade, but about decorative iron work - making beautiful iron flowers, gates, plant stands, fireplace firedogs, brass fire screens, fireplace fenders, and a score of other Victorian blacksmithing projects. You get descriptions of the tools and anvil, of course, but you'll also find an interesting bending jig. The smithing chapter alone has 274 illustrations!

And on it goes: files, scrapers, buffing wheels, annealing furnaces, hardening and

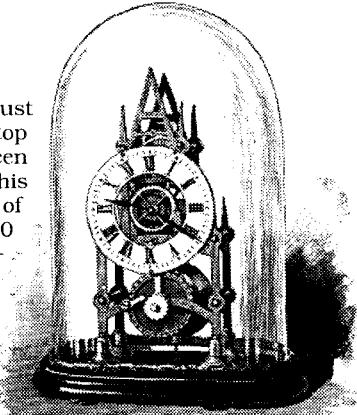


Fig. 1788.—Skeleton Clock and Glass Shade.

Dave Gingery writes:

Metalworking is nothing short of a dream-come-true for anyone beginning to put together a home shop...

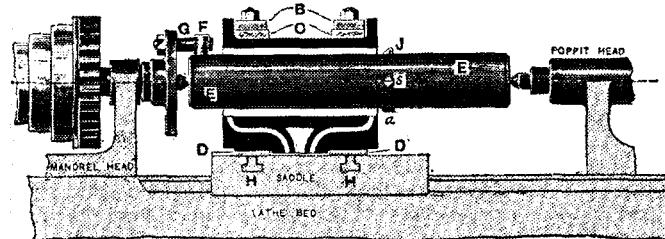
I thought the Foundry Work section lacking in some details of practice and procedures. But the discussions of various types of furnaces makes up for any lack elsewhere. Wish I had seen this section when I was putting my foundry together years ago....

Naturally I appreciate the section on lathes and lathe work. And the chapter on building a lathe is by itself worth the price of the book. So also the details on tooling, attachments and accessories...

Every shop bird should order a copy of this one. And if he's dumb enough to lend books, he should order two or more copies because few people would return this one...

CONTENTS:

- foundry work • smiths' work • surfacing metals • polishing metals: the machines and processes • annealing, hardening, and tempering • drilling and boring • taps, screwplates, and dies • soldering brazing and riveting • forging iron and steel • working sheet metal • repoussé work • oriental decorative brasswork • finishing, lacquering, and coloring brass • lathes and lathework • spinning metals on the lathe • tools for measuring and testing metalwork • building a 4 1/2 in. centre lathe • gilding and silver working • making a skeleton clock • building a small horizontal steam engine • making a 1/4-hp vertical steam engine • boiler making • building a petrol motor • making water motors • building a dynamo and electric motor • electroplating • wire working • electric bell making • making a microscope and telescope.



tempering equipment, drills, boring bars, and much more. You'll learn about the torches, bellows, furnaces, hearths for brazing and riveting.

The chapter on forging is more what we consider blacksmithing today: the basics of manipulating iron by heating and hammering.

The sheet metal chapter is a gem. With 177 illustrations you'll learn to make everything EXCEPT ventilation ducts. You make a small oil cook stove with oven, a deed case, a "coal vase" (decorative coal scuttle), a sizeable traveler's trunk, a drainer, a square copper tea kettle, and — much more. Incredible!

Once you've spent a life time learning all of this, you can begin repoussé: the decorative embossing of sheet metal.

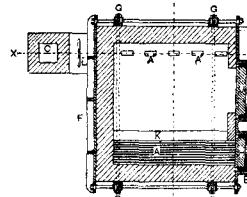


Fig. 531.—Horizontal Section of Annealing Furnace.

of dimensioned drawings. And this is a governed engine, too.

Build three different boilers. You can build a model horizontal boiler 13" long and 7" in diameter. Or fabricate a small vertical boiler 24" tall and 12" in diameter

that can generate 1/4 hp of steam.

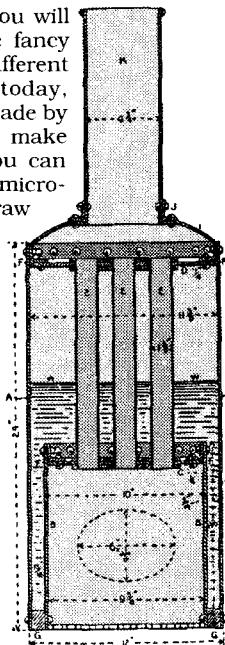
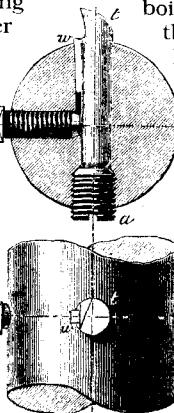
I don't want to be around when you decide to build the 8 hp boiler that stands 8' tall with 4' stack on top of that. This mother is 3 1/2" in diameter, is riveted, and looks like more than I would ever want to tackle.

Build a gas engine with a 2 1/2" piston and 2 1/2" stroke. This 1 1/2 hp air-cooled engine weighs about 25 lb and is suggested for use on a bicycle.

The 18" diameter water wheel will develop 1/4 hp at 30 psi and as much as 3/4 hp at 90 psi.

The dynamo/motor will generate or consume 50 watts of power.

You'll find talk about silver, copper, and gold plating and brass gilding in the electro-plating chapter. The wire working chapter is



incredible in that you will learn how to make fancy wire screening of different lattices that we, today, think can only be made by machine. After you make the electric bell, you can make a brass stand microscope, and a four-draw telescope with an erector for terrestrial viewing (a "must-have" for all would-be pirates...).

Again, anyone who works metal must have a copy of this. The ideas in here will fire you up. You'll really like this. Top rate. I can't say enough about this one. Get a copy. 6x9 hardcover 760 pages 2,206 illustrations No. 21265

\$29.95

Fig. 1994.—Vertical Section of Vertical Boiler.

GREEN-SAND CASTING

reprinted by
Lindsay Publications

You've built a small furnace, and you have a ladle of molten metal. What are you going to do with it? Are you going to pour it into an old boot? You had better have a sand mold ready.

You probably already realize that making green-sand molds (the sand isn't really green, just wet) is more of an art than a science. Where to put sprues and runners, vents for steam and gas, and just how hard to ram up the sand are skills that come only with practice.

Old timers will tell you that you can't really learn green-sand molding from a book, and they're probably right. But this book comes as close to revealing the secrets as any I've seen. When you see the gorgeous illustrations, you'll agree.

This is a reprint of chapters from a 1903 technical school textbook. Learn about tools, materials and methods, including sands, tempering, sieves and riddles, rammers, required hardness, deep molds and venting, drawing the pattern, closing and pouring, shaking out the casting, and much more.

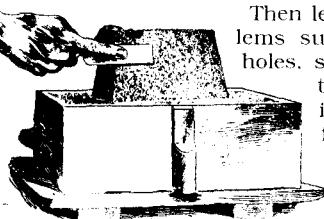
Learn about molding by bedding in — a technique in which you build the mold right



GREEN SAND CASTING

on the foundry floor in a pile of sand. It's quite a skill to level and set up such a mold.

In part three you'll learn about molds for casting iron. You get rare illustrated how-to-on making joints for irregular forms, three-part molds in three-part flasks, three part molds in two-part flasks, followboards in forming joints, plaster-of-Paris matches, match plates, gingers and soldiers, setting of cross bars, nails and rods at joints and corners, valuable lessons on patching molds, swabbing broken corners, sleeking and printing dry blackening, skin-dried molds, types of gates and pouring basins and more.



Then learn about chaplets, problems such as blowholes, shrink holes, shrinking and contraction, techniques of proper feeding, bench molding with different type of snap flasks, and on and on.

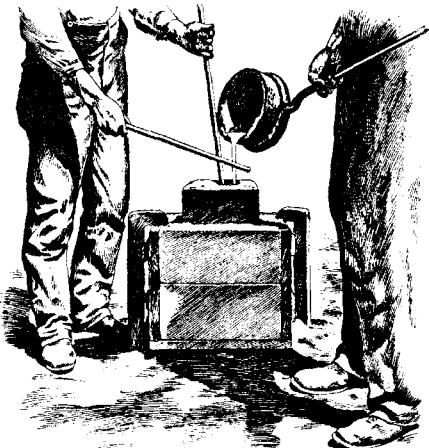
Most of what you learn in this book is on a larger scale than what a home foundryman might need. But the techniques are exactly the same. The illustrations are dynamite! You won't just be told how it was

done, you'll see for yourself.

Build Gingery's charcoal furnace. Ram up a mold, melt down some aluminum cans and scrap and make a pour. No matter how good your casting is, you'll want to make it better and more complicated next time. You'll learn how to do just that — right here!

This is one of the essential books for the foundry library. Excellent book. More techniques here than you will use in a month of Sundays. Get a copy! 5 1/2 x 8 1/2 softcover 174 pages No. 4082

\$9.95



Navy Foundry Manual!

In 1958 the government may actually have done something right!

by foundry personnel aboard repair ships and tenders. The recommended practices are based on procedures proved workable under Navy conditions and are supplemented by information from industrial sources.

The Manual is divided into two general sections. The first section, chapters 1 through 13, contains information of a general nature, such as 'How Metals Solidify,' 'Designing a Casting,' 'Sands for Mold and Cores,' 'Gates, Risers, and Chills,' and 'Description and Operation of Melting Furnaces.' Subjects covered in these chapters are generally applicable to all of the metals that may be cast aboard ship.

The second section, chapters 14 through 21, contains information on specific types of alloys, such as 'Copper-Base Alloys,' 'Alumi-



num-Base Alloys,' 'Cast Iron,' and 'Steel.' Specific melting practices, suggestions for sand mixes, molding practices, gating, and risering are covered in these chapters.

This manual has been written with the 'how-to-do-it' idea as the principal aim. Discussions as to the 'why' of certain procedures have been kept to a minimum. This manual contains information that should result in production of consistently better castings by repair ship personnel."

Although it pays to know why procedures are performed the way they are, the first step IS to perform them. Consider this to be pure practical how-to. It delivers. Excellent book. No two ways about it. If you pour metal, you need this book. Get a copy of this. You won't be disappointed. A gem! 8 1/2 x 11 softcover over 300 pages No. 20072

\$19.95

FOUNDRY MANUAL

by the United States Navy
reprinted by Lindsay Publications

Looking for a great foundry handbook? I hate to admit the government ever did anything right, but this 1958 NAVSHIPS publication is a gem. It's loaded with some of the best foundry photos and drawings I've ever seen. You can learn by merely studying the illustrations.

The preface accurately describes the Manual—

"This Manual is intended primarily for use

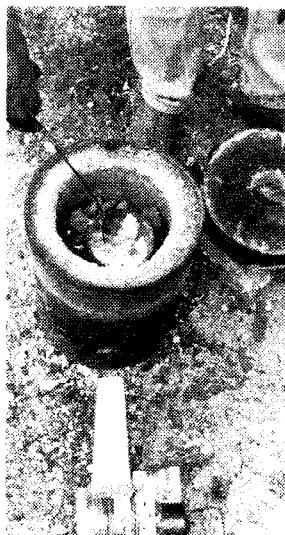


Melt Aluminum with Grocery Store Charcoal!

CHARCOAL FOUNDRY
by Dave Gingery

You can melt aluminum, pot metal, and even brass with a very simple home built furnace fueled with grocery store charcoal. In a very few minutes you can melt beer cans, your wife's pots and pans, the siding off your neighbor's house, the pistons out of your car, and anything else you can beg, borrow, or steal. It costs very little to build, and it works incredible well.

All you need is an old metal 5-gallon pail, about \$6 worth of fireclay, some sand, a junk auto heater fan with a coffee can shroud (or a vacuum cleaner), and this book to build a high temperature furnace. One man built the furnace itself for about \$7. The blower, cords, a pipe for a crucible, and the rest cost a few dollars more, but I can't imagine that the whole set up being more than \$25 - probably much less if you're a good alley picker.



A CHARCOAL KILN MADE OF CINDER-CONCRETE BLOCKS

by A. Richard Olson
and Henry W. Hicock
reprinted by Lindsay Publications Inc

You can melt metal with natural gas, and it's obviously far more convenient, but charcoal is the traditional fuel. And you can make your own!

You get a booklet published in February 1946 by the Connecticut Agricultural Experiment Station. These kilns were devised to turn wood into charcoal to supply the ten to twenty thousand tons of charcoal needed by Connecticut farmers back then to cure their tobacco. You can use it to produce fuel for a cupola or other foundry furnace or perhaps even a smelter!

You get complete plans and details for both a one- and two-cord kiln. A standard

Dave Gingery shows you how in this classic text!

Some sandbox sand and fireclay will do very well for making sand castings. And all you need are some 1x4's and a few nails to build a cope and drag to make your molds. You wouldn't believe how easy it is to build a complete foundry.

After making a pattern (something that takes some skill), I rammed up a sand mold and fired up the furnace. In went the crucible around which I placed about 75¢ worth of charcoal briquettes. Into the crucible went beverage cans, an old electric iron, and a couple of pistons. After skimming off the dross, I poured the 1400°F metal into the sand mold. About 20 minutes later, I had a face plate casting for a small lathe. Since then I've made lots more castings, and you can too.

This is the first book in Gingery's series showing you how to build a complete metal working shop from scrap for almost nothing. You must have the foundry setup in order to build the lathe, milling machine and other tools described in each of the other books. Castings make strong and precise machine tool components. You'd go broke buying the castings, if they were avail-

able, but you can make them for almost nothing in your own foundry.

Building machine tools takes hours and hours, but building the charcoal foundry is far simpler, and loads of fun. You can make castings for any purpose. Almost anyone can build a furnace, and you will become "hooked" on melting metal once you try it.

The "Charcoal Foundry" is a small book worth every penny of its price and then some. Every page is loaded with practical how-to useful advice. You get many, many drawings and excellent photographs that will show you step-by-step how to build a foundry.

Highest recommendation! This is the book to get started with. Thousands already have! Top rate! Get a copy. 5 1/2 x 8 1/2 softcover 80 pages No. 163

\$7.95



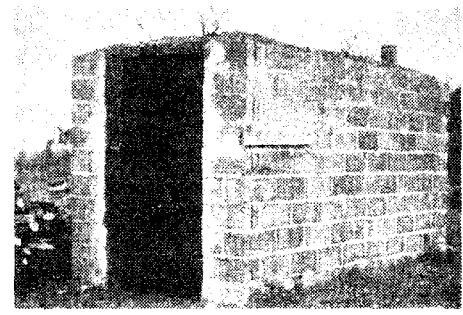
Make Your Own Charcoal!

If you have plenty of wood, even if it's just old pallets, you can make charcoal!

cord of wood is 4'x4'x8'. So you know these babies are big units, at least for the backyard foundryman. You get details on materials, the site, foundation, building the coaling chamber, building the top, and building the chimney stove. Then you learn about loading the kiln, firing, coaling, closing and cooling, and finally opening. You get tables showing typical firing times for coaling oak, maple, birch, and other dense woods.

Great booklet! Dirt cheap! Provides great information. Get a copy for your library today! 5 1/2 x 8 1/2 booklet 30 pages No. 21060

\$3.95



Green Sand Casting Video!

GREEN SAND CASTING TECHNIQUES

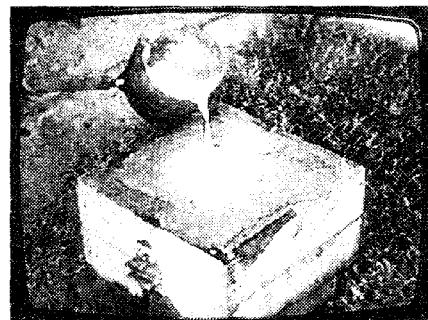
by Dave Gingery and Robert Bailey

You can learn to ram up a green sand mold without this video just as I did by reading Dave's classic "Charcoal Foundry". But! When I watched this video, I found out why my castings were only passable, and why his were expertly done! He shows you how to get a first rate casting. I've poured a good many castings, and yet, I learned much from the master.

You get a review of the tools that can be purchased from the hardware store and made from scrap materials. You'll see Dave mold a two part flywheel pattern in bonded silica sand. You'll watch Dave ram up the sand, swab it, rap the pattern, pull it, and repair the damage.

With the pattern removed and the mold reassembled, you'll watch Dave fire up the

gas-fired crucible furnace. Watch the flames jump from the vent hole! When the aluminum is molten, you can watch Dave pull the cherry red crucible and pour the mold. A



little later, you'll see Dave shake out the

Visit Dave Gingery's Shop!

mold to reveal a beautiful flywheel casting ready for machining.

As a bonus, you will see Dave's complete homebuilt machine shop fabricated from aluminum castings. See Dave's lathe in action. Watch his shaper cut flats on a shaft, and his milling machine surface an angle plate, and more. You'll see Dave's two cylinder Stirling engine running while the match plate patterns used to make it sit in the background. Even the Rider-Erickson hot air engine is shown running.

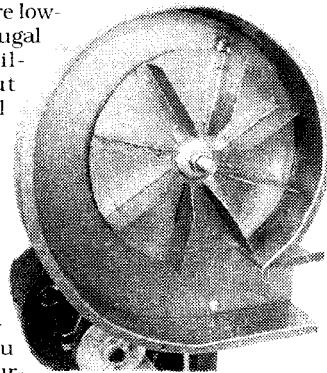
What you get here is a how-to on making sand molds. But you're also taken into Dave's shop and shown the marvels that he describes in his books. You'll come away from this video fired up! Snap up a copy of this VHS video. I guess it's about an hour in length (I was too busy winding and rewinding to get an exact measurement). NTSC only No. 1320

\$29.95

HOW TO DESIGN & BUILD CENTRIFUGAL FANS

by Dave Gingery

There are low-cost centrifugal fans available, but rarely will they do exactly what you want them to. If you're building a small furnace to melt aluminum, you can use a surplus fan. If you're going to build a brass or cast iron foundry, you'll probably need more pressure than a make-shift fan can provide. If you're going to build a dust collection system for woodworking tools, a welding booth, or a grinding wheel, you'll find that the blowers you need are not available at low cost.

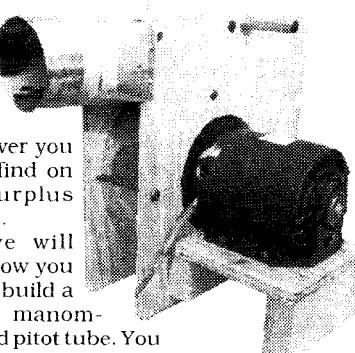


Build Dave Gingery's Centrifugal Fans

Build inexpensive powerful blowers for a variety of uses!

Dave will show you how to design a fan with simple math that will provide the volume and pressure you need for the system you're building. With a pocket calculator you can figure the dimensions of the fan, the size of motor needed to drive it, and predict performance.

You'll be shown how to use pillow blocks, shafting, plywood, sheet metal and other common materials to build a dirt cheap blower that outperforms a n y make-do blower you might find on the surplus market.



Dave will also show you how to build a simple manometer and pitot tube. You can actually measure performance and fine tune your air system. Dave used this equipment to build and adjust a powerful gas burner for his iron-melting crucible furnace.

Learn how to build a dust precipitating cyclone, design sheet metal transition pieces (a very valuable skill), balance a dust collection system, build a static balancing stand, and more. Gingery's brand of simplified do-it-yourself knowledge is not available anywhere else. Top rate. Order a copy. 5 1/2 x 8 1/2 softcover 112 pages

No. 4600

\$9.95

Melt Iron in Dave Gingery's Gas Fired **CRUCIBLE FURNACE!**

Fast, safe melts! Easy-to-build!

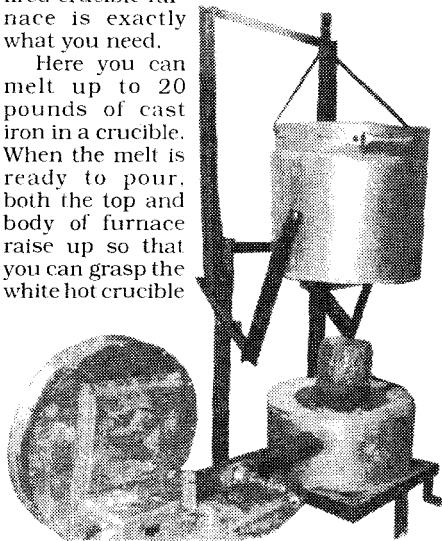
BUILDING A GAS-FIRED CRUCIBLE FURNACE

by Dave Gingery

Dave says beginners should "cut their teeth" melting and casting aluminum before trying "hot stuff." An excellent simple, low-cost furnace for this is the charcoal furnace described in one of Dave's earlier books.

Once experienced, you'll want to pour larger quantities of aluminum than the charcoal foundry can provide, alloys with higher melting points such as brass, and eventually cast iron. You'll also want to use a more convenient and lower-cost fuel. The gas-fired crucible furnace is exactly what you need.

Here you can melt up to 20 pounds of cast iron in a crucible. When the melt is ready to pour, both the top and body of furnace raise up so that you can grasp the white hot crucible



from the sides making the crucible easier and safer to control than if you had to use tongs to lift the crucible straight up as is done with other furnaces.

Although charcoal is widely available, it is messy and somewhat expensive. Gas is low-cost and clean, but requires a more complicated burner. Dave will show you all the tricks, including how to build the centrifugal blower, so that you get a hot, efficient and quiet gas burner.

You get wall-to-wall how-to — the detailed information that Dave is famous for. Six chapters cover basic design, building the furnace body, building the frame, building the burner, crucible and tongs, and operating the furnace. You get photographs, drawings and proven techniques.

You get the standard Gingery quality. Full tilt! Complete! Detailed! Excellent! You can pour your own cast iron castings, quickly and safely adding a whole new dimension to your machine shop. Get a copy of this. Highest recommendation! 5 1/2 x 8 1/2 softcover 108 pages

No. 1281

\$10.95

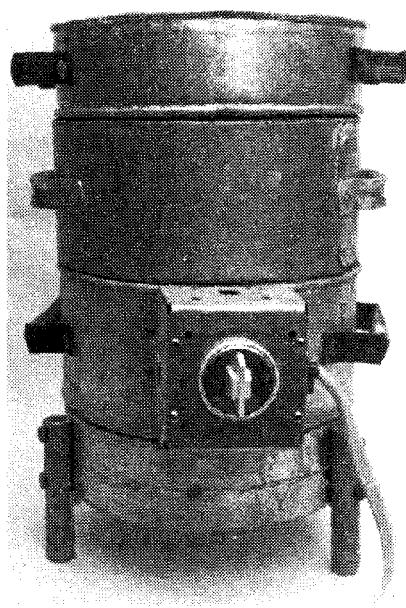
LI'L BERTHA

(Dave Gingery's 1800° Carp Smoker! Melts Metal, too...)

"LIL BERTHA" ELECTRIC FURNACE

by Dave Gingery

Let Dave show you how to melt aluminum and brass with electricity! If you have good ventilation and are careful, you can melt indoors, rain or shine. Electricity isn't cheap, but it's no more expensive than charcoal, and it's right there in the wall — all you need. Best of all, you can dial up the heat you need on thermostat, put the metal in the crucible, and go ram up your molds. After the metal melts, it will sit there at pouring temperature until you're ready. The furnace will practically watch itself.



You can build this high performance electric furnace that runs at 1800° practically forever for very little money. And it's surprisingly easy.

Not only that, you can use Li'l Bertha to calcine investment molds, carburize and heat treat metal, forge, temper, anneal, enamel, fire ceramics, and many other tasks. If you go to the trouble of getting the harder-to-find high temperature electric element, you can fire at 2300° for extended periods, making this furnace ideal for melting brass!

Dave will show you how to size the furnace to fit your needs, where to get and how to handle crucibles, make the electrical calculations, and more. This is typical Gingery material — top rate wall-to-wall how-to. Order a copy. 5 1/2 x 8 1/2 softcover 67 pages. No. 4163 \$8.95

Call early in the day!

If you intend to call us for information, to place an order, or to troubleshoot a problem, call us early in the day. We may be difficult to reach late in the afternoon. Call soon enough, and we'll be able to get your order out the same day.

PRACTICAL WOOD PATTERNMAKING

PRACTICAL WOOD PATTERNMAKING

by J Robert Hall

reprinted by Lindsay Publications

In 1943 Hall was the Instructor of Patternmaking and Foundry at the Santa Monica Technical School in California. Judging from his book, he must have been more a man of action than words. You get dimensioned drawings, molding diagrams and photographs while text is held to a minimum.

You get 89 lessons that can't all be listed here. Each lesson, or chapter, starts with the words "How to". You'll discover how to sharpen a gouge, measure lumber, use runners and gates, lay out and cut square holes, use leather fillets, use templates, lay out and cut a true round or ball, make cores, make and use face plates, use wing core and wing prints, use babbitt anchors, use balance cores and chaplets in core work, make a medium or large spur gear pattern, use a cupola and crucible in metal melting, and on and on.

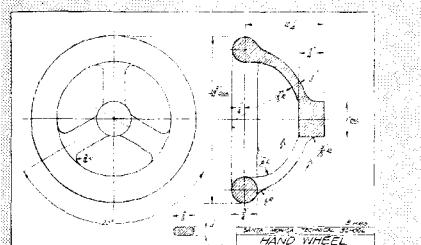
You get a large format book with 89 lessons, wall-to-wall illustrations, including

"The purpose of this textbook is to prepare the individual to become skilled patternmaker in the shortest possible time."

dimensioned drawings of patterns of useful castings such as bearing caps, a hand lever for a machine, a crank, a foot pedal, a hand wheel, a pulley, and dozens more.

You'll visit three different foundries to watch molders ram up molds, to see their inventory of stock patterns, and more.

A great teacher and a great reference from a more modern perspective! If you melt metal, you need patterns to make molds. This is a valuable book to have in your foundry library. They don't get much better than this. Grab a copy. 8 1/2 x 11 softcover 188 pages No. 21095 \$14.95

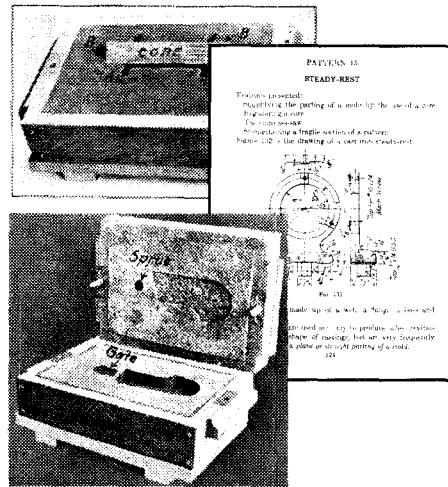


GREAT CASTINGS START HERE!

WOOD PATTERN-MAKING

by Herbert J McCaslin
reprinted by Lindsay Publications

Melting metal isn't difficult. Burn enough fuel fast enough, and you can melt metal. What IS difficult is making a useful casting. You need to make a wooden model that can be used to make an impression in the sand



into which the metal can flow and cool. Fabricating that model, the pattern, is an art and science. Here you get the secrets.

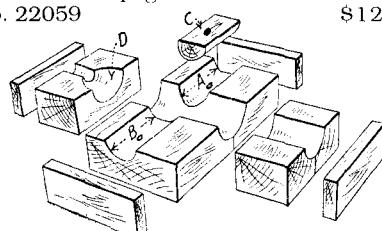
You get two parts: bench work and lathe work. In the first few chapters you get basic information on precision woodworking, but then it gets useful. Instead of building an end table, you'll learn how to build patterns so that you can cast a surface plate, clamp, link, bracket, pedestal, pawl, lathe-leg, bell-crank, tool-rest slide, steady rest, tailstock, hopper, gear case, cylinder head, starwashers, lever, rammer head, carburetor connector, glue-pot, water jacket, piston, handwheel, flywheel and more. And as you go along you are shown how to make the necessary cores, and the secrets that allow you to pour complex castings relatively easily.

You get dimensioned drawings, demonstrations of how the mold is rammed up, how to turn the cylinders needed in a wood lathe, and much more. It's all heavily illustrated. There are many pattern books out there, most of so-so quality. This is one of the very best I've seen. And from it you can produce valuable castings for your lathe and model engine, instead of some huge globe valve for an oil pipeline.

Great book. If you pour metal, this is definitely something you should have. Melting metal is easy. Casting it is a different matter. Get a copy of this. 5 1/2 x 8 1/2 softcover 296 pages

No. 22059

\$12.95



Just A Small Part of the Contents

...MACHINE-FINISH Finishing the surface of metal; the indication mark used on the drawing to specify that the operation is required; finish allowance. PATTERN 3 - PLATEN Finish allowance for cast iron; drilled holes; sandpapering small interior concave surfaces. PATTERN 4 - SURFACE PLATE The name of the parts or members of a casting; the requirements of a casting which determine the molding position of the pattern; draft allowance on coped surfaces; built up patterns; application of the butt-joint; glue; its preparation and use; the size, selection and use of wire brads; leather and wax fillets; the trimmer; the fillet press. Questions on patterns 2, 3 and 4. PATTERN 5 - CLAMP Cores and core-prints; table of core-print proportions; determining between the use of a green-sand core and a dry-sand core; the bevel; the use of the protractor; the bevel-protractor; the firmer-gouge; shellacking core-prints; marking the location of the core on the pattern; when the core comes just to the surface of the casting; sectional view of the clamp mold; numbering core-boxes. CORE-BOX FOR THE CLAMP PATTERN A parted core-box; dowel-pins; selection of dowels; locating dowels; cutting dowel stock; setting wood and metal dowels; calculating the depth of auger-bit holes; shellacking core-boxes. Questions on patterns 4 and 5....

PATTERN 11 - SUPPORT Shaping patterns; finish allowance on the walls of cored holes. CORE-BOX FOR THE SUPPORT PATTERN Shaping the cavity of semicircular core-boxes; arranging the material for core-boxes; roughing out the core cavity upon a saw-bench; the core-box plane; the rabbet-plane; testing with a try-square the accuracy of a semicircular core-box. LAYING OUT PATTERNS PATTERN 12 - LATHE-LEG A pattern layout; pattern construction; band-sawing; application of a templet; what to avoid when operating a bandsaw. Questions on patterns 10, 11-12. PATTERN 13 - BELLCRANK Application of the end-lap, arranging the material so as to obtain the maximum strength of the wood; application of a templet; a cross-section or a section view of a casting; sandpapering the rounded edges of pattern members; supplementary patterns. PATTERN 14 - TOOL-REST SLIDE Giving greater strength to a pattern by the arrangement of the core-print; arranging a core-print so as to simplify the construction of the core-box; proportioning a core-print so as to balance a core. CORE-BOX FOR THE TOOL-REST SLIDE Core-frame construction. PATTERN 15 - STEADY-REST Simplifying the parting of a mold by the use of a dry sand core; registering a core; strengthening a fragile section of a pattern; methods of producing openings in web members of patterns; the compass saw. CORE-BOX FOR THE STEADY-REST Core-box arrangement and construction.

EXERCISE 8 Turning core-prints; turning a number of similar shaped objects from one piece of material. FACE-PLATE TURNING Types of screw and face-plates; placing the screws which secure the material to the face-plate; the use of a thickness of facing material between the face-plate and work. Questions on exercise 6-7-8. PATTERN 25 - BASE Preparing and mounting material upon a screw-plate; application of the dividers; the care and use of the diamond-point and round-nose tool. PATTERN 26 - COLLAR Preparing and mounting material upon a face-plate; turning an interior surface or wall of a hole; inside calipers; Sandpapering an interior surface....

PATTERN 31 - TOOL-REST Making provision upon the pattern for the mounting of a casting between the centers of the lathe; responsibility of the patternmaker; the dowel joint; application of counter sawing. MOUNTING THE MATERIAL FOR TURNING PARTED PATTERNS Methods of holding stock together while turning; the pinchdog; the corrugated-faster; stiffening the material for turning fragile parted patterns. PATTERN 32 - LEVER Combination lathe and bench work; turning a parted pattern....

PATTERN 38 - PISTON Core-box construction; attaching small bosses to irregular surfaces; the Fostner-bit. PATTERN 39 - HAND-WHEEL Loose piece feature; application of templets. PATTERN 40 - THREE LEG-BASE Spider construction, rechucking, securing rechucked work to a face-plate....

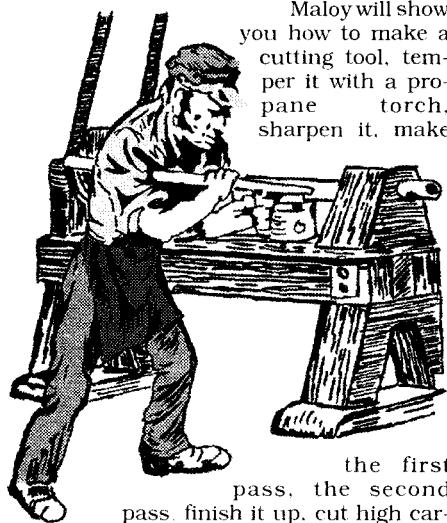
PATTERN 45 - RING Segmental construction; table of chords of segments. PATTERN 46 - HOUSING Three part mold; segmental construction; application of templets; application of a loose-hinge. PATTERN 47 - FLYWHEEL Wheel pattern construction; the three-part lap....

The Simple Lathe

TURNING METAL ON A SIMPLE LATHE
by John F. Maloy

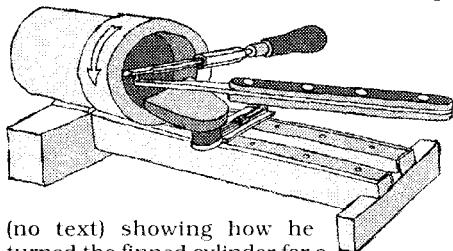
Maloy first saw freehand turning performed by an expert blacksmith. Nineteen years since then, Maloy has used the technique to make steam engines, small airplane engines, and a muzzle loading barrel rifling machine. He has also managed to bore a hole 44" deep free hand that was off center by only .010" at the opposite end!

Maloy will show you how to make a cutting tool, temper it with a propane torch, sharpen it, make



the first pass, the second pass finish it up, cut high carbon steel, and make additional gravers. Illustrated but less well described are constructions of a bell chuck and a face plate.

You'll find that Maloy is also a talented illustrator. You'll find a series of drawings

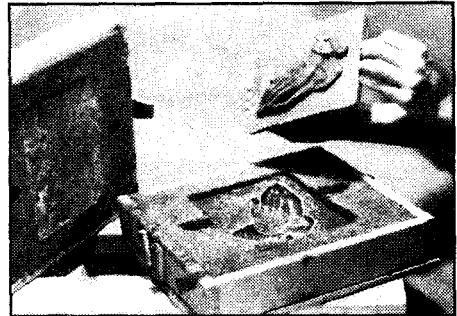
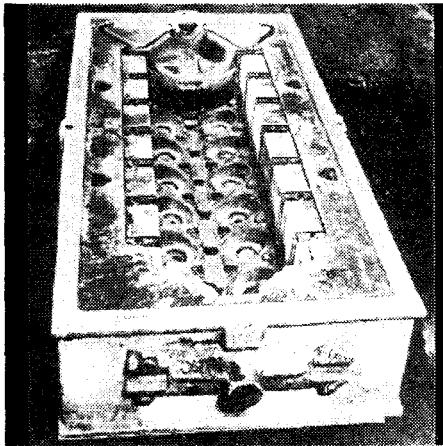
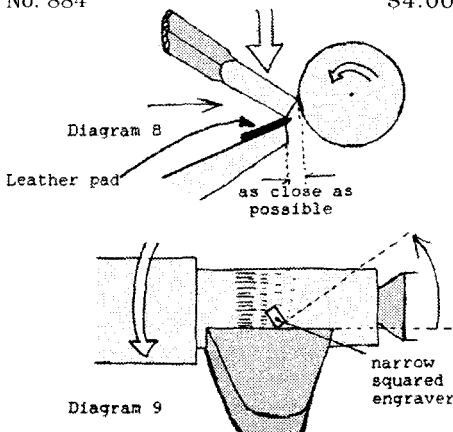


(no text) showing how he turned the finned cylinder for a 3/4" pipe tee engine.

Get a copy. This is information that you don't often find. I think you'll be surprised by the accuracy possible! Good reading. 5 1/2 x 8 1/2 booklet 24 pages.

No. 884

\$4.00



ORNAMENTAL METAL CASTING
by Robert Whitmoyer

Melting metal and pouring castings is an extremely valuable skill when designing and building machinery. But casting metal can be a whole lot more than that!

Whitmoyer will show you how to take Gingery's charcoal furnace and push it into new areas. You'll learn how to build and operate a charcoal furnace capable of melting 2 1/2 quarts of aluminum. You'll learn how to make a beautifully simple, yet easy-to-handle crucible, flasks, a molding table, and all the other components you'll need.

CAST OBJECTS OF BEAUTY from aluminum

MELTING & CASTING ALUMINUM
by Robert J Anderson

You get five chapters (the only really good chapters) from a huge 1925 engineering text covering melting practice, production of secondary aluminum (in other words, recycling scrap), foundry practice, casting losses and defects, and the production of die castings with permanent molds.

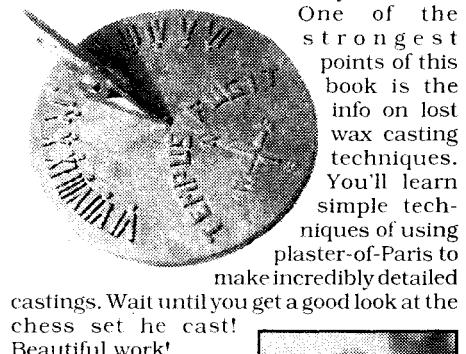
There are probably newer alloys and better ways of handling them developed, but aluminum is still aluminum, and for the low-tech applications we generally come up with, this book gives really detailed solid information that is otherwise hard to find.

You'll find discussions of fluxes, refractories, ways of evaluating scrap, pouring procedures, measuring pouring temperatures, how to cure porous castings, and much more. You'll find the die casting chapter covers the molds, their use, and troubleshooting. This is some of the most practical diecasting information I've run across yet.

If you pour aluminum, you should have a copy. You're sure to learn something that will help your improve your work. Order a copy.

5 1/2 x 8 1/2 softcover 253 pages
No. 4597 \$9.95

You'll learn how to mold and cast plaques, a sundial, solid figurines, penny bank replicas, and a large fountain that would cost you a fortune to buy.

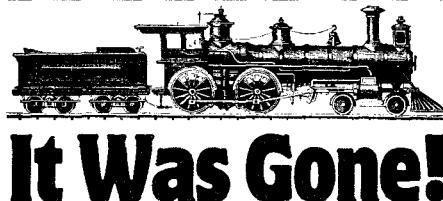


One of the strongest points of this book is the info on lost wax casting techniques. You'll learn simple techniques of using plaster-of-Paris to make incredibly detailed castings. Wait until you get a good look at the chess set he cast!

Beautiful work!

If you love casting metal, you must get a copy of this. It will round out your abilities and will enable you to cast objects that might be a whole lot easier to sell than something like indexing heads. In other words, the skills here could make you some money on the side. Excellent book! Loaded with photos and drawings. Great how-to! Get a copy!

5 1/2 x 8 1/2 softcover
92 pages
No. 4430 \$9.95



"Dear Lindsay

In Denver a couple of years ago I found an original copy of **Modern Locomotive Construction** at \$175.00. After I had convinced myself I deserved it, I went back and it was gone! When I found it listed in your catalog I stopped to fill out the order form before I finished the rest of the catalog. This one is well worth the price.

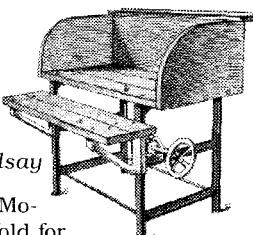
I got a copy of **Locomotive Valves and Valve Gears** a couple of months ago. It's excellent."

Dick Morris

Secrets of Cores

CORE MAKING 1940

by Elmer F. Scott
reprinted by Lindsay Publications



When General Motors casts a manifold for an automobile engine, how do they create the complicated hollow passageways? With cores.

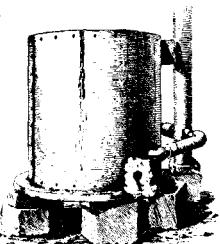
Cores are bizarre shapes made from sand and a sticky binder like molasses. After the core is molded, it is baked until hard. After the main green sand mold is rammed up, the core is carefully placed inside, and the mold is closed up. After pouring the casting, the hardened sand core can be broken out to leave the hollow passage.

Cores save unnecessary time and expense in machining, and in manifolds, for instance, produce passageways almost impossible to create any other way.

Although this is a textbook for an apprentice about to enter an industrial foundry, there is enough information to make it useful for the home foundryman. You learn about cores and tests, materials used, core-sand mixtures, green-sand cores, sweeping green-sand cores, making green-sand cores in boxes, making small round cores by hand, core-making machines, reinforcing of cores, venting of cores, core plates and dryers, core baking, treatment of dried cores, and core room temperatures.

This is a revised and expanded edition of the coremaking section from *Core Making, Dry-Sand & Loam Molding* that we offered until a couple of years ago. Cores are extremely useful, and the price of this book is right. Get one. 5 1/2 x 8 1/2 softcover 80 pages No. 21419 \$7.95

MELT IRON



(only a few left - won't be reprinted - they're probably gone by the time you read this...)

CUPOLA PRACTICE & MIXING CAST IRON

by International Correspondence Schools
reprinted by Lindsay Publications

"Iron has actually been melted in an old flour barrel that was lined with clay and pieces of brick. Iron has been successfully melted in a 12-inch cupola having a blast furnished by a blacksmith bellows."

You'll learn about firing cupolas, mixing iron scrap, construction and maintenance of industrial cupolas. Also! a small, but fascinating section on melting iron in a small cupola.

Melt iron! Here are the secrets! More than a few useful lessons to be learned. Get a copy. 5 1/2 x 8 1/2 softcover 128 pages No. 4120 \$7.50

Build a Cupola! Melt Iron, Bronze!

Low-cost, small, high yield!

BUILDING SMALL CUPOLA FURNACES

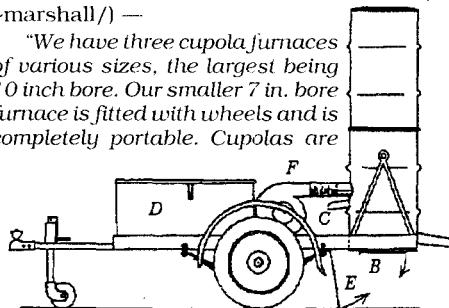
by Stewart Marshall

"A book on home metal casting and building your own foundry." Now here's a self-published book about melting iron in a cupola. It's a bit on the expensive side, but Marshall knows what he's talking about. And the book is worth every bit the price if you're serious about melting iron. It's one of the best I've seen.

I picked this up off his web site (<http://www.rockisland.com/>

-marshall/)

"We have three cupola furnaces of various sizes, the largest being 10 inch bore. Our smaller 7 in. bore furnace is fitted with wheels and is completely portable. Cupolas are



continuous melters, with the charges of metal melted in layers alternating with layers of replacement fuel, usually coke. There are no expensive crucibles to worry with. The molten metal is accumulated in the base of the furnace and tapped into homemade ladles as needed. The 10 inch Marshall furnace is capable of approx. 20 to 25 lbs. of grey iron every 5 minutes or about 40 to 45 lbs. of bronze every 6 minutes. Heats of upwards of two hours are possible, so it is obvious that these furnaces are capable of producing vast



Pouring a 9 lb. Iron Casting with 7 in. Cupola in background. These photos are from the web site NOT the book!

MELTING IRON IN THE CUPOLA

by J. E. Hurst
reprinted by

Lindsay Publications

Backyard cupolas are miniature versions of larger industrial furnaces described in detail in this excellent 1929 book.

Chapters include: historical, construction, operation, charging receivers, combustion, tuyeres, special blowers, linings, and briquettes. You get practical information. In the operation chapter, for instance, topics include smooth operation important, preparation of the cupola, chipping out, daubing, making up

Melt Iron in a Cupola!

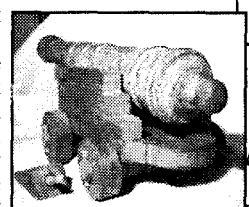
the bottom, the tap hole, the fettling breast and slag hole, the tapping spout, charging the cupola, the bed coke, and much more.

A lot of this equipment is too large for the hobbyist, although the 10" cupolas described are useable. You should be able to take this info and scale it down to, say, a 6" furnace of your own design. Or you can use this info to fire or even modify a small furnace perfected by others. Knowing how the pros did it can reduce the number of mistakes you'll have to make.

This won't show you how to build the cupola step-by-step but it will open your eyes to what they are and how they work. Excellent book. Get a copy. I think you'll like it. 5 1/2 x 8 1/2 softcover 220 pages No. 21028 \$9.95

Single Blast Inlet into hollow part of cupola shell.

Downcomers



minimum of 150 cfm and 1 to 2 oz. Blast.

Upper part of Furnace Shell is hollow and double-walled.

Shell from two 30 gallon drums.

Shape of tuyere recommended by Edward Kirk.

Rammed Lining min. 3" thick.

Figure 18

amounts of metal for their size and cost. The 10 inch furnace costs less than \$200. US to build and the blast can be provided by a large shop vac. One man can easily operate it alone."

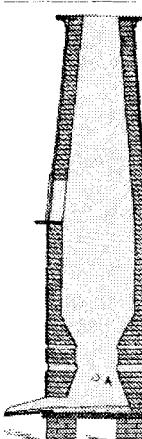
How does he do it? The details are here. Chapters include history and basic construction, building small cupolas, operation of small cupolas, ideas and suggestions, building a larger 13" cupola, and additional thoughts.

There are no photos, but lots of informative drawings, and most important, lots of operational detail. In other words, you get hints and tips that can only come from someone who has done it.

If you want to melt iron, you must have this. Expensive, but it delivers. Get one! 8 1/2 x 11 wire spiral binding 100 pages No. 1442 \$25.00

IMPORTANT!

Since the author has these printed in very small batches, it IS quite possible that we will have to backorder your copy and ship it when new stock arrives. Serious delays are possible if demand is heavy. Marshall is metalworker, not a big time publisher (yet)...



MODELING IN WAX

**MODELING IN WAX
FOR JEWELRY & SCULPTURE**
by Lawrence Kallenberg

Lost wax casting is a powerful technique for producing precision metal castings. The author draws on twenty years of experience to explain the process of lost-wax casting, equipment, wax models from molds, carving blue and purple wax, carving green wax, wax build-up, sheet and rod wax, accidental effects, specialized wax techniques, and finishing the metal model.

All of this, of course, is designed for making intricate jewelry. You'll learn how to carve stock wax shapes into a diagonal dome ring, or a pendant with stone, a rose pin, and more.

The lessons taught here should help you produce intricate machine parts and works of art. Well illustrated book, nicely written, and although it's a bit expensive, it delivers rare information. Consider it carefully. 7x10 hardcover 252 pages

No. 1290

\$32.95

Weld Cast Iron

CAST IRON WELDING
by Tin Man (Kent White)

Welding cast iron can be difficult. But if you know the secrets not only can you weld cast, you can do an excellent job.

White talks about having worked and learned at Harrah's auto museum in Reno with Lane Plotner in the early 70's. Plotner had repaired the engine of the only known Bugatti Royale.

had a single head, individual cylinders, an aluminum jacket, and an oil pan. A thrown rod had shattered one of the cylinders. Plotner gathered up the pieces from out of the pan and welded the cylinder back together. The engine was reassembled, check for leaks, run for a short time and then shut off. It was an amazing accomplishment.

You learn to weld with a torch and with arc on gray iron or ductile, but not white cast (can't be welded), or nodular iron (well documented elsewhere).

As an example White repairs a V12 Lincoln manifold with two cracks. You'll learn how to clamp it down to prevent distortion, make up your own filler rod from old piston rings, grind out the crack, and weld it up. He'll also show you how to do it with commercial rod. Then you'll watch him literally run the hot manifold out to the woodstove to cook it. Proper cooling is essential if you're to avoid the deadly "tink." Watch him arc weld a reproduction Model-A manifold with nickel rod. Learn how to preserve a machined surface while you weld the casting. And more!

About half the tape is done under lenses as he welds and talks. There's much to learn. Let Tin Man teach you. Good tape. Get one. About an hour and a half. VHS NTSC only. No. 1402 \$39.95

Cast Small Metal & Rubber Parts!

**HOW TO CAST
SMALL METAL & RUBBER PARTS**
by W. A. Cannon

Restorers of old autos and users of small, specialized castings take note! You'll find all you need to know about reproducing both metal and rubber castings right here. You'll find chapters on six casting methods, alloys, equipment you can make, molding sands, fluxes, degassers, and flasks. Learn how to make molds and pour. Learn about a remarkable rubber substitute and how to use it to make grommets, pads and stripping. Learn how to mold from damaged or defective molds. Lots more. A good book on an unusual topic. 5 1/2 x 8 1/2 softcover 144 pages

No. 117

\$14.95

Casting Handbook

**COMPLETE HANDBOOK OF
SAND CASTING**

by C. W. Ammen

Let Bill Ammen with his more than 35 years experience show you how to make professional castings with sand molds. Learn about molding, sand mixes, tools, mold making equipment, patterns, cores and core boxes, bench molding, floor molding, gates, sprues, risers, proper gating design, non-ferrous melting furnaces using coke, oil, and gas, and a 12 inch cupola furnace that can melt more than half a ton of cast iron per hour.

Here's solid, advanced information for the guy who wants to improve his castings and move on to more complex fields. Ammen also comments on starting a foundry business.

Good book. Thousands have already been printed and sold! 5x8 paperback 238 pages well illustrated No. 116

\$15.95

Thermit Welding!

*by Richard N. Hart
reprinted by Lindsay Publications*

Thermit! What an incredible process! Take a mixture of powdered aluminum and iron oxide, ignite it, and stand back! Within seconds the mixture flames to twice the temperature of molten steel, and from the bottom of the special crucible comes molten iron. In 1914 Thermit was a cheap and simple

BRASS HINTS

BRASS HINTS & TIPS
reprinted by Lindsay Publications

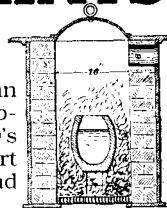
From issues of American Machinist Magazine published in 1880's and 1890's comes this collection of short articles on the casting and machining of brass.

Articles include tools for working brass such as jigs for holding brass bearings while facing off in a milling machine, a jig for winding brass springs, internal threading tools for making nuts, and more. Three different articles will show you how to design and build furnaces to melt brass. Letters from readers of that era will give you tips on furnace modification and crucible care, and how to clean brass, remove sand scale, make special cores and so on.

These old-timers will show you how they poured their own brass castings and turned their own bearings. You get many unusual century-old illustrations. Excellent. Order a copy! 5 1/2 x 8 1/2 booklet 16 pages

No. 849

\$3.00



BRASS FOUNDRY

reprinted by Lindsay Publications

Pouring molten brass is somewhat different from pouring aluminum or iron. This chapter from a 1903 technical school textbook will show you the differences. You'll learn about the molding sand needed for brass, blackenings and partings, contraction, gating and feeding, cleaning of castings in tumbling barrels and with pickling, the crucible furnace, a simple brass furnace, brass furnace in a battery, increasing the speed of the melt, combined cupola and crucible furnace, oil burning furnaces, care of crucibles, and more.

You get valuable info on melting copper and old brass, adjusting and handling the crucible, precautions and prevention of oxidation during melting, use of deoxidizing fluxes, and more. You get info on all the brass alloys, how to grade scrap brass, borings and turnings for melting.

Great info! If you think you'll ever want to attempt to pour brass, then order a copy now! 5 1/2 x 8 1/2 booklet 39 pages

No. 868

\$4.00

way to weld railroad track, axles, and even broken motor shafts.

Learn about the invention of Thermit process, welding rail, special crucible and rail molds, butt welding of pipes, broken locomotive frames, and much more. You get detailed information on the chemistry involved, how to set and preheat pieces, how and why to add nickel or titanium, the use of Thermit in foundry practice, examples of practical welds, including photos of repairs on a torpedo boat rudder, a locomotive frame, even a steamboat paddlewheel axle!

Unusual process! Loads of rare information! Get a copy! 5 1/2 x 8 1/2 booklet 40 pages

No. 899

\$4.25

1880 Picture Book of Machinery!

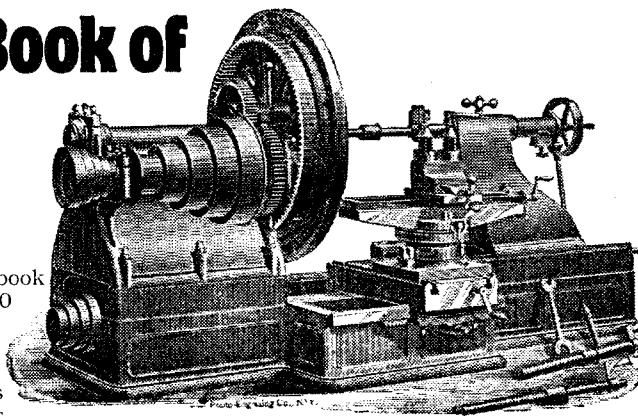
**POWER AND MACHINERY
EMPLOYED IN MANUFACTURES**
by U.S. Dept Interior, Census Office
reprinted by Lindsay Publications Inc

This incredible machinery picture book was released in 1888 as part of the 1880 census. You get wall-to-wall wood engravings of American industrial machinery...

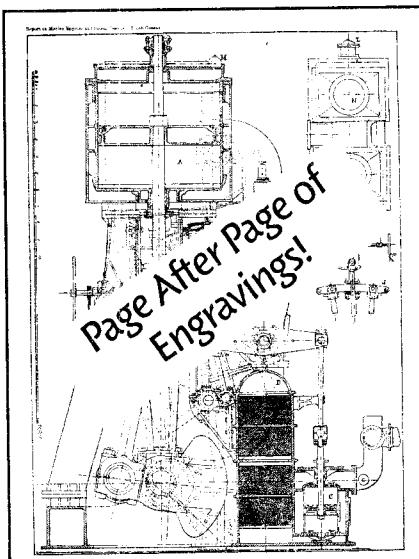
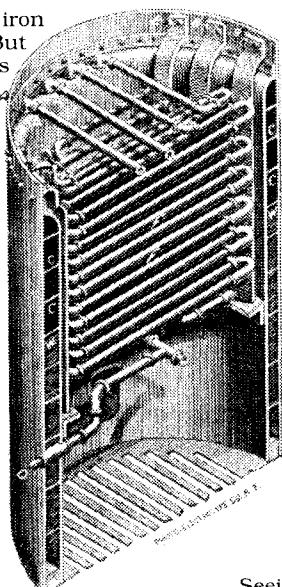
The general table of contents includes General Letter of Transmittal; Statistics of Steam and Water Power Used in the Manufacturing of Iron and Steel; Machine Tools and Wood-Working Machinery; Wool and Silk Machinery; Pumps and Pumping Engines; Manufacture of Engines and Boilers; Marine Engines and Steam Vessels; and Report on the Ice Industry of the United States.

The first chapter on power for iron and steel has no illustrations. But the next section on machine tools and woodworking machines has 570 engravings covering everything from a sash and door groover head and molding machines to 10 foot plate bender and 84 inch lathe. It's like walking through the most modern metal and/or woodworking shop of the 1880's.

You get page after page of fascinating pumps, ten pages of incredible fire engines, about thirty engravings revealing the silk and wool industry. You get a report on the manufacture of engines and boilers with 32 engravings. You'll see travel-

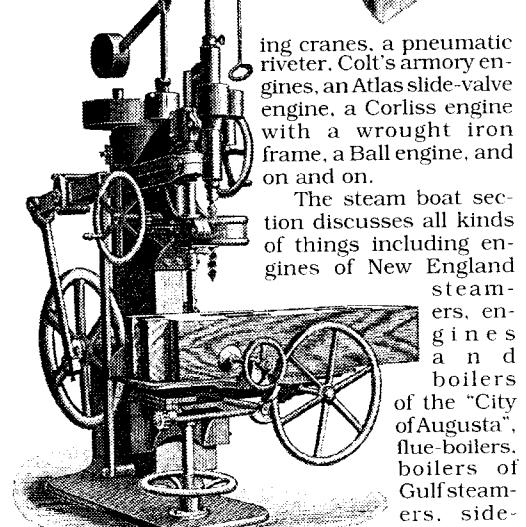
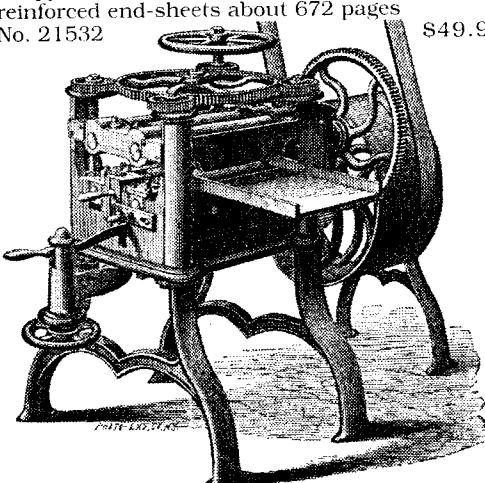


Machine Tools,
Woodworking Machines,
Engines, Steamboats! More!



Seeing all these engravings together in one giant volume provides a sweeping picture of American industry more than a century ago. This is a must-have for the antique machinery nut, historian, restorer, collector and builder. Great book at a reasonable price. Other publishers would ask a lot more. It doesn't get any better than this. Order a copy. 8 1/2 x 11 hardcover with extra thick boards reinforced end-sheets about 672 pages
No. 21532

\$49.95



ers, compound engines of an ocean steamer, engines of Mississippi river steamers, and more. Thirty eight engravings here.

Finally, explore the ice industry back when mechanical refrigeration was just being introduced.



CASTING VIDEO!

**GREEN SAND CASTING
TECHNIQUES VOLUME II**
with John Dilsaver

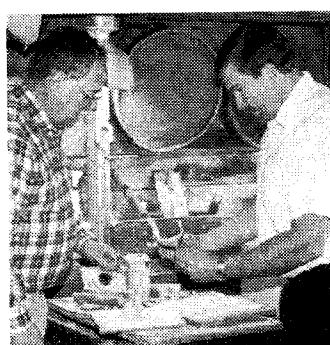
Let John Dilsaver (who got his start with Gingery's "Charcoal Foundry") show you three advanced molding techniques for the Rider-Erickson hot air engine using Dave Gingery's patterns. You'll see the casting of the yoke which uses a follower because of its irregular parting line. It's an ingenious solution to a difficult molding problem.

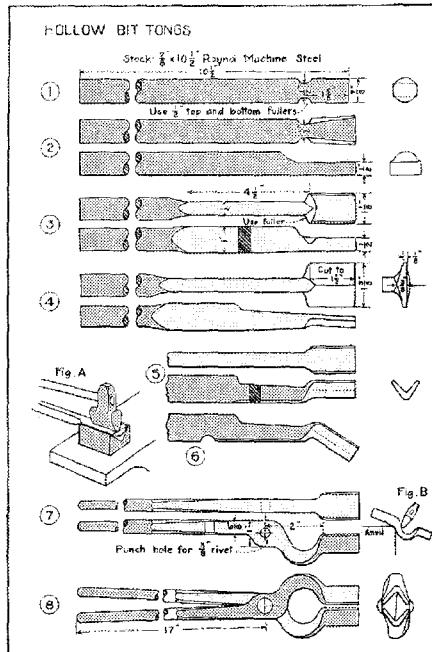
Second, you'll see how the engine cylinder is cast with a hollow interior using a green sand core rather than the usual baked sand core. The secret to this fascinating and time saving technique is the use of a perforated pipe to support the green sand. John makes it look so easy.

And finally, you'll see a number of small engine parts cast in brass using the match plate technique. As it is poured you'll easily see how much hotter brass is compared to molten aluminum. You can almost imagine how much hotter still molten iron would be. You'll hear these people who have poured brass and iron recommend that you start by casting aluminum before moving to the "hot" stuff.

Excellent content is the same high quality as the first. Good quality video. VHS cassette about 40 minutes in length
No. 1326

\$29.95





Harcourt's Forge Practice

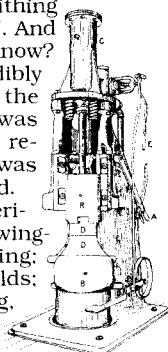
ELEMENTARY FORGE PRACTICE

by Robert H. Harcourt

reprinted by Lindsay Publications Inc

Yes, another black-smithing book. This one from 1917. And it's a good one. How do I know? The original was so incredibly filthy throughout, that the printer's photographer was sent to a sanitarium to recover after copying it. It was used. And used. And used.

Chapters include materials and equipment; drawing out, bending and twisting; common welds, special welds; hammer work; annealing, hardening, and tempering steel; and tool forging.



There are no photographs, but there are detailed drawings illustrating 42 different exercises which include s-hook, beam strap, twisted gate-hook, practice welds - fagot, ring - round lap weld, common eye-bolt, angel weld, forged open-end wrench, flat-jaw tongs, link tongs, cape chisel, cutting-off tool, threading tool, cross-peen hammer, ball-peen hammer, geologist's pick, machine rock-drill and more.

The author was an instructor in forge practice at Leland Stanford Junior University - part of Stanford University in California. He wrote "The purpose in this book is to give the student of forge practice an understanding of fundamental operations employed..." This was the textbook he used to teach blacksmithing. It's brief, to the point, and informative.

Yes, it covers some of the same materials as other smithing books, but every book is slightly different. Check out some of the illustrations here, and see what you think. I think it's good and should be made available. Consider it. 5x7 softcover 148 pages No. 21699 \$8.95

Elementary WROUGHT IRON

ELEMENTARY WROUGHT IRON

by J. W. Bollinger

reprinted by Lindsay Publications

In 1930 Bollinger was a teacher at Theodore Roosevelt Junior High School in Tulsa, and his goal was to teach young people to work iron. His book, this small jam-packed manual, is a gem. You get straight-to-the-point step-by-step how-to that is well illustrated.

You get four parts: introduction, materials and tools, operations, and projects. Most of the book is dedicated to the last two sections. Within operations, you'll learn about building a forge fire, measuring and laying off, cutting tapering, upsetting, flaring, twisting, making bends over the anvil, shaping an eye, shaping a ring, drilling, riveting, threading, brazing, hardening tool steel, finishes and much more.

Projects are broken into

TOOLS: marking gauge, depth gauge, ice scraper hack-saw frame, ice tongs, and more.

ARTICLES OF FURNITURE & MISC: por-

table camp fire grate, telephone table, magazine basket, door knocker, fern stand, aquarium stand, kitchen stool, and more.

ANDIRONS AND FIREPLACE ACCESSORIES: rings design, gooseneck design, twisted design, poker, shovel, fender and more.

CANDLESTICKS: tulip design, single candlestick, two arm candlestick - twisted design, three-arm candlestick with heart ornaments and more.

LAMPS: desk lamp, two-bulb lamp, table lamp with four leaf cluster ornament, bridge lamp with prism ornament, bridge lamp with scroll designs bridge, and more.

FILLER-INS: bill file, paper weight, good-luck horseshoe, and more.

The term wrought iron in the title of this book refers to a craft rather than to a type of metal. And Bollinger really does a great job in providing projects for those who want to beat metal with a hammer. Great illustrated how-to. Get a copy. 5 1/2 x 8 1/2 softcover 139 pages No. 22105 \$11.95

BENT IRON WORK

by Paul N. Hasluck

reprinted by

Lindsay Publications Inc

Some of this appeared Hasluck's "Metal Working" described elsewhere in this catalog, but you get much more here.

Consider this light blacksmithing. You don't need heat, but you do need a bench anvil, hammers, pliers, and other sturdy tools to turn iron strap into fancy lamp brackets, vase stands, candlestick brackets, unusual picture frames, fancy grills, fire screens for your fireplace and much more. Fastening is done with simple clamps and rivets.

Chapters include tools

and materials; bending and working strip iron; simple exercises in bent iron; floral ornaments for bent iron work; candlesticks; hall lanterns; screens, grilles, etc; table lamps; suspended lamps and flower bowls; photograph frames; newspaper rack; floor lamps; and miscellaneous examples.

Fig. 116.—Grille at Chichester Cathedral.

Hasluck was a Brit, and the projects he shows are British in design. You'll see drawings of grills and screens from Winchester and Chichester Cathedrals, and Westminster Abbey. You might want to copy them. Classic, beautiful stuff.

Small book from 1903. We enlarged it somewhat to fill the page, and so we old codgers can read it more easily. Loaded with great how-to. I've got a copy here waiting for you. 5 1/2 x 8 1/2 softcover 160 pages

No. 21842

\$9.95

Fix Yer Busted Pocket Knife**THE COMPLETE BOOK OF POCKETKNIFE REPAIR**

by Ben Kelley

Ya say you busted your pocketknife cleaning the grease out from under your toe nails? Well what were you doin'? Lubricating the fifth wheel on your Peterbuilt with your feet? Here's how you can fix the knife, but I don't what you'll do about the greasy toenails.

Chapters include bench tools, power tools, knife repair, polishing and buffing,

blade restoration, handle repair, jiggling and dying bone handles, keyhole construction, heat treating hints, materials for pocketknife repair, care and maintenance, how to sharpen a knife, general information, replacing a blade and parts of the knife.

Kelley has in past lives has assembled aircraft and has been a tool maker in addition to being a pocketknife collector. Here, in this heavily illustrated volume, he'll show you the tricks to repairing knives as well as restoration. Loaded with useful information. Get a copy. 6x9 paperback 130 pages

No. 1438

\$10.95

Bend Iron!**Build the Wimberley Forge****HOW TO BUILD A FORGE**

by David Wimberley

Let Dave Wimberley show you how to convert a standard water heater shell and old vacuum cleaner into a quality blacksmithing forge for very little money. This 20" diameter firebrick-lined design requires no welding and has a hood that with careful installation will allow you to operate the forge indoors without asphyxiating yourself.

Dave will show you how to use standard plumbing fixtures to pump in the air blast. He'll show you how to line the steel basin with firebrick and

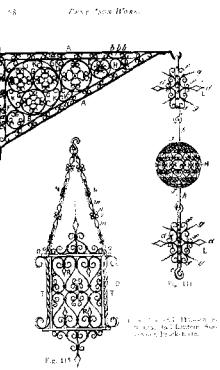
how to lay out the conical hood.

He'll even show you how to make a refractory fire cover that makes the forge safer and more convenient to use. The only special tool you'll need is an abrasive cut-off blade for your power circular saw.

Here's an excellent proven design presented in an easy-to-understand fashion with excellent drawings and photographs. Set up a blacksmith shop and pound iron! Excellent plans! Order a copy today! 5 1/2 x 8 1/2 booklet 15 pages

No. 845

\$4.50



time, and how many machines one many could run, and so on.

You learn how a 9" billet was bored and then forged into a rifle barrel. You learn about different methods of rifling the barrel. You can image the proving shed where the new barrel was overcharged with powder and tested to see if it would explode. You'll find that

cast steel was a rare and novel metal when arms manufacture began, but you'll see it was commonly used by 1880. You'll meet the men whose genius created gun stock duplicating machines. Learn about the details of polishing and finishing. You even get a brief report on ammunition manufacture.

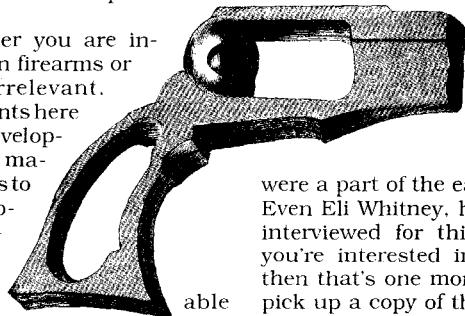
This is a fascinating history of technology written a hundred years ago by people who

The Story of Mass Produced Firearms

rifles, muskets and pistols. You get an illustrated history of the mass production of fire-arms from 1814 when Col. North started producing interchangeable pistol locks at Middletown, CT to the "recent" improvements of 1880.

Whether you are interested in firearms or not is irrelevant. What counts here is the development of machine tools to mass produce uniform interchangeable parts.

This is where milling machines, profiling machines, turret lathes, gang drilling machines and the like were designed and perfected. You'll find it easy to imagine that you're actually running the Harper's Ferry armory, the Springfield armory, or Colt's factory because you get the details on how many parts a particular machine could produce in a day's



were a part of the early history. Even Eli Whitney, himself, was interviewed for this report. If you're interested in fire-arms, then that's one more reason to pick up a copy of this. But any machinist should find this interesting. It's one thing to be able to use a milling machine or turret lathe. But knowing who developed it, when and how and make mental working even more fun.

Interesting book. Low cost. Unusual interesting reading. Great wood cuts. Consider this carefully. 5 1/2 x 8 1/2 softcover 80 pages

No. 20846

\$6.95

Blacksmith Shop & Iron Forging

BLACKSMITH SHOP AND IRON FORGING
reprinted by
Lindsay Publications

Blacksmithing is the forging of iron with simple tools — the same forging process carried on today with enormous presses and dies.

There are a great many books that will show the usual blacksmithing projects, but have you ever made a bolt head by welding on a ring? Have you made a rocker arm? How about a steam locomotive reverse shaft? Or a rudder frame?

Besides these rare topics, you get a complete discussion of blacksmith shop equipment: the forge, tuyeres, bellows, hood, chimney, fuels, anvil, all types of hammers, chisels, and all the rest.

The second part will teach you about the making of cast and wrought iron and basic operations of forging. You'll make an eye hanger, gate hook, and other educational projects. You'll learn how to weld and make a small chain and tongs.

Although blacksmithing today is almost a fine art, it was once a basic machine shop skill needed in day-to-day operations. This 1906 technical school textbook will teach you both the basics and new tricks. Excellent book. Great illustrations! Inexpensive! Order a copy today. 5 1/2 x 8 1/2 softcover 96 pages

No. 4074

\$7.50



ELEMENTARY FORGE PRACTICE
by John L. Bacon
reprinted by
Lindsay Publications

Forge practice is metal working at its most basic level: heating, shaping and hardening. With it you can turn steel stock into boring bars, pliers, hammers and other useful tools.

Chapters include a general description of forge and tools, welding, calculation of stock for bent shapes, upsetting, drawing out, bending, simple forge work, calculation of stock and making general forgings, steamhammer work, duplicate work, metallurgy

of iron and steel, tool-steel work, tool forging and tempering, and more. You get a number of tables and many pages of plans for useful learning projects: forge shovel, poker, C-clamp, bolt tongs, cold chisel, center punch, lathe cutting tools, scraper, hammers, and more.

You can make hammers, harden the faces, use a steam hammer with jigs and dies to make duplicate work, forge and grind lathe tools and much more. You learn skills that can save you money. A lot of this material is advanced 1908 "high-tech" material being used in industry not usually found in craftsman type books.

If you're new to forge practice and/or blacksmithing or want more than the usual beginner's books, order a copy of this. You'll like it. 5 1/2 x 8 1/2 softcover 288 pages

No. 4457

FORGE WORK

by William L. Ilgen
reprinted by Lindsay Publications

Ilgen taught at Crane Technical High School in Chicago in 1912 and produced this gem of a blacksmithing textbook.



Forge Work

Chapters include: tools and appliances, forging operations, practice exercises, treatment of tool steel, tool making and stock calculation, steam hammers, art smithing and scroll work, preparation and smelting of iron ore, manufacture of iron and steel, and formulas and tables.

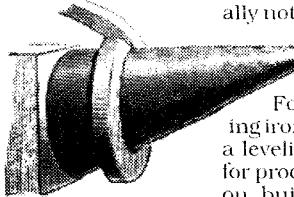
You'll learn about the straight peen hammer, chisel tongs, the hot cutter, the flatter,

MANUAL OF BLACKSMITHING

by John R. Smith
reprinted by Lindsay Publications

From 1902 comes yet another blacksmithing manual. But a glance will convince you that this is noticeably different from other smithing books.

Chapters include forges and appliances,



Manual of Blacksmithing

hand tools, drawing down and upsetting, welding and punching, conditions of work: principles of formation; bending and ring making; examples of forged work; cranks, model work, etc.; homemade portable forges, and manipulating steel at the forge.

What makes this special are topics gener-

ally not seen in other books. For instance: an illustration of "Elevation of Applique for Rounding Bolt Heads" and "Apparatus for Lifting Heavy Forgings". You'll see a machine for bending iron strap, and leveling block with screw, a leveling block with bending templet, a jig for producing a bent crankshaft, and details on building two different portable forges including construction details on the two-

stage foot-operated bellows, and more.

This book glosses over the basics and throws interesting hardware at you. Great illustrations. If you spend hours at the forge or are preparing to, this is worth having. Get a copy. 4x7 softcover 158 pages

No. 21281

\$9.95

FORGECRAFT

by Charles Philip Crowe
reprinted by Lindsay Publications Inc

Charles Crowe of Ohio State University has returned from 1913 to teach us how us the fundamentals of working iron, of being a blacksmith, and of being an artist in iron.

Chapters include the forge, tools, materials used, formed work, hooks and chains, welding, special welds, heat treatment, tool smithing, hardening and carbonizing, tempering and an additional chapter on metallurgy.

You'll learn the basics of bending and welding stock into rings, drawing tapers, forging a corner, and much more. You'll find these same lessons in other books, but here you get action photos taken with the work on the anvil. You'll learn what constitutes the design of a good hand forged chain hook and how to make it. You'll see how unusual welds are used in a forged swivel, a hook with eye, a square socket wrench and more. Study the photos and watch two professional blacksmiths forge a cutting tool for a large lathe. That's something to see.

Numerous photos, samples of unusual pieces of work, and the professional tone of the text are the strengths of this book. Excellent. I had no doubts about reprinting it when I first saw it. Get a copy. 5 1/2 x 8 1/2 softcover 175 pages

No. 21087



Forge Craft

Forge Weld on an Anvil!

HOW TO FORGE WELD ON A BLACKSMITH'S ANVIL

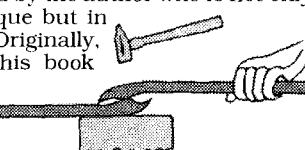
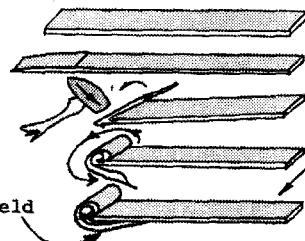
by Robert M Heath

"For those who have diligently tried and failed."

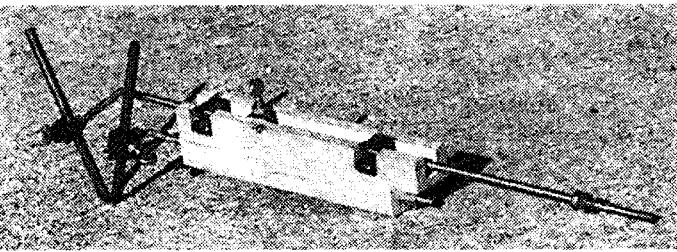
Forge welding can be difficult and downright frustrating, but is a necessary skill you must learn if you ever hope to consider yourself a master blacksmith. Heath will walk you through the theory and the practical techniques.

You'll learn how to flux, how to recognize the signs of iron hot enough to weld, how to "pop the weld" and much more. He'll explain the "wet look method" used by expert blacksmiths who rarely miss a weld. You'll learn to prepare scars to make a strong lap weld. Also covered are the secrets of welding layers of steel to achieve simulated Damascus steel. If you make knives, you may want to try scarfing the steel layers before welding them into a billet. Heath will show you how to make chain and more.

This is a quality booklet published by the author who is not only knowledgeable in theory and technique but in the history of metalworking as well. Originally, this information was taken from his book *Quest for the Indian Trade Gun* and was improved and expanded to become this great booklet. If working the black metal is your first love, consider this by all means. 8 1/2 x 11 booklet 52 pages
No. 1378



\$9.95



Build a Carbon Arc Torch!

HOW TO BUILD A CARBON ARC TORCH

by Don A. Meador

Pump a large electrical current between a slightly separated pair of carbon electrodes and you come up a 9000° F flame useful for melting metal, welding and brazing. Here Meador will show you how to build a carbon arc torch using wood, tubing and commonly available carbon electrodes. You really don't need much money or expertise to build an excellent working torch.

You do need a source of high-amperage current such as an arc welder, but perhaps you could jury-rig another source such as a bank of auto batteries. (This could be dangerous, so be careful. You're on your own.) The maximum recommended amper-

age for a 3/16" electrode is 30 amps which is not much. On the other hand, 1/2" electrodes need up to 140 amps. But, then, what are you planning to do anyway? Braze two battleships together?

It's a nice little, inexpensive torch that you can assemble in a snap. Don's booklet is self-published, and it looks pretty good with photos and drawings. It's not a slick profession publication, but it does deliver. And the price is reasonable.

So build a torch. Use it to light up your movie lot, fry fish, or cauterize herpes lesions (although I don't think I want to be around to smell that!). You might even try using the torch to heat metal! Order a copy. 5 1/2 x 8 1/2 booklet 30 pages
No. 1349

\$6.95

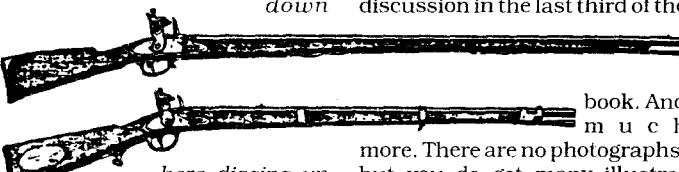
Quest for the Indian Trade Gun

QUEST FOR THE INDIAN TRADE GUN

by Robert M Heath

"I am a civil engineer with the Mississippi Department of Transportation and have hobbies of archaeology and blacksmithing... We used to visit with the archaeologists from Harvard who were down

Here you get a book published by the author himself. It's typewritten, and the binding is side-sewn by hand. It's essentially a handmade book. You get history of iron smelting, discussion of crystal structure, hardening and tempering, forge welding, and you get barrelmaking discussion in the last third of the



here digging up Indian mounds..."

What do you think often turned up in burials? Right. Muskets! And Heath with his insatiable curiosity started researching the history, metallurgy, and the archaeology of English and French guns that were traded to the American Indians. But the author went one step further, and that sets this book apart. He set out to reproduce the gun barrels using blacksmithing techniques of the day.

book. And much more. There are no photographs, but you do get many illustrations. And you get details, details, details.

This is NOT a how-to manual. You will NOT be shown how to build firearms. Again, this is not "slick". You get the feeling that this is some secret information not widely available. And that might be the case. This may remain an obscure, hard-to-find publication. Very reasonably priced considering the limited supply and unusual information it provides.

8 1/2 x 11 side-sewn 269+ pages
No. 1379 \$20.95

Water Resistor

HOW TO DESIGN AND BUILD A WATER RESISTOR FOR CARBON ARCS

by Don Meador

If you plug a carbon arc torch directly into an outlet and the fire torch up, it will draw as much current as the house wiring will allow until the flame comes up to temperature and is adjusted. Usually, you'll blow the breaker. But you can directly power a torch from a 110 volt outlet if you control the current flow with a variable resistor that can handle the large currents and the heat generated by those currents. Here, Meador will show you how to build a simple water resistor from common materials.

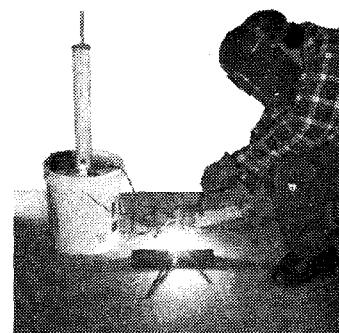
The first third of the book delivers simple equations and sample calculations showing you how to determine how much water to use and how long it will take the water to heat up and cool down with use. The author will also show you how simply modify a transformer and a meter so that you can actually measure the current flowing through your torch as it is used. The last

two thirds will show you in detail how to build the resistor out of a plastic bucket, pvc tubing and a copper tubing electrode.

Now remember: you are dealing with house current. If you're a typical American bozo, I suspect this is too dangerous for you. If Ralph Nader found out you were building one of these things, he would drop a load in his pants. But if you build this and are careful, you can generate enormous heat with very simple equipment

If you're serious about building an arc torch or possibly a small arc furnace to melt steel, this is a must have. But be careful! Rare info. Well done. Worth having. 5 1/2 x 8 1/2 booklet 52 pages
No. 1440

\$7.95



Weyger's Fantastic Books Are Back! At a Bargain Price!

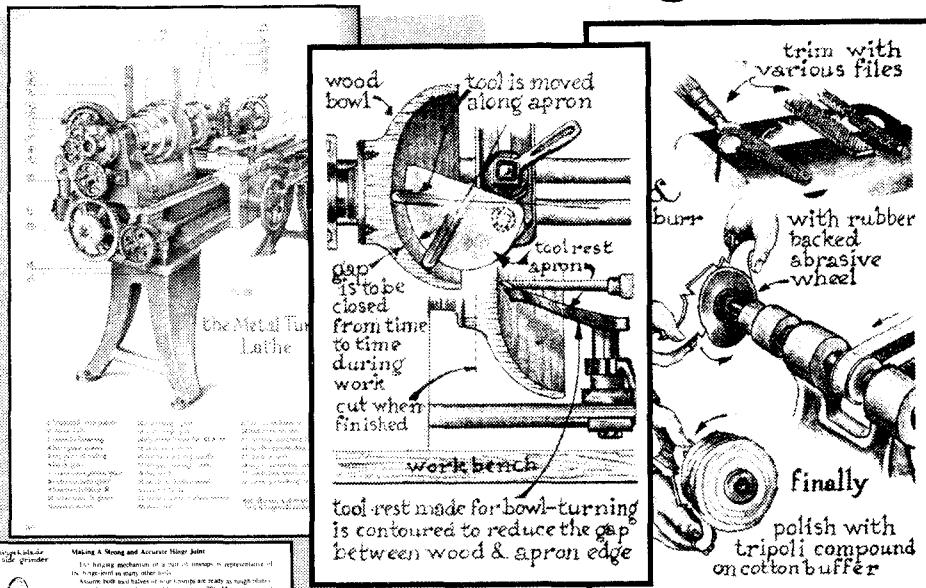
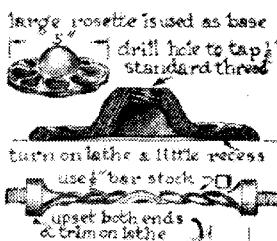
THE COMPLETE MODERN BLACKSMITH by Alexander G Weygers

Years ago I offered Weyger's *The Making of Tools*, *The Modern Blacksmith*, and *The Recycling, Use, & Repair of Tools*. They first appeared in the early 70's at about \$7 each. When the publisher decided to switch to \$100 books, they dropped this incredible set of books. Now a new publisher has reprinted all three in a single volume at a price lower than that of twenty years ago. BARGAIN!

Any one of his books is a joy: loaded with practical easy-to-read how-to text with countless beautifully drawn illustrations in the margins (by the author himself). You'll learn how to do everything from the make the chisels you'll need to carve that marble bust of your mother-in-law to getting that old metal lathe that pulled out of the bottom of the river going again. Weygers doesn't just tell you, he shows you.

Check out the sample illustrations here. Go over the contents. I'm here to tell yah, if you don't have a copy of this in the library, you aren't much of a metal worker. And there's no excuse for not having all three books. This is a flat out bargain. My old copy of *Making Tools* alone has a price of \$8.95. Today it would have to sell for \$15. Top rate information!

It doesn't get much better than this. Order a copy. Now! 8 1/2 x 11 paperback 300 pages
No. 1432 \$19.95



Contents

Tempering Steel • Making A Screw Driver • Making A Cold Chisel And Other Simple Tools • Making Stonecarving Tools • Sharpening Tools • Making Carpenter's Chisels • Making Cutting Tools • Making Eyebolts And Hooks • Making Tool Handles • Making Hammers • Making Sculptor's Woodcarving Gouges • Making A Seating Cutter And Hinge Joints • Making Tinsnips • Making Wire And Nail Cutters • Making Large Shears • Making Pliers • Applying Patina To Steel Surfaces • Blacksmith Shop And Its Equipment • Hammer And Body Motions In Forging • First Blacksmithing Exercises • Upsetting Steel • Upsetting With The Aid Of An Upsetting Matrix • How To Temper And Harden High-Carbon Steel • Making A Right-Angle Bend • Some Tools That Are Simple To Forge And Temper • Decorative Treatment: Rosettes And Wallhooks • Hinges • Hold-Down Tools • A Fireplace Poker • Fire Place Tongs • A Spatula Made From A Section Of Coil Spring • A Door Latch • Making An Offset Bend In A Bar • Blacksmiths' Tongs • Stonecarving Tools • Wrenches • Accessory Forging Tools • Woodcarving Gouges • Forging A Pair Of Pliers • Making A Fireplace Shovel • Making A Small Anvil From A Railroad Rail • The Power Hammer • How To Repair Broken Garden Tools • Making A Charcoal Brazier And Screening Scoop • A Candlestick • Making Tool Handle Ferrules And Shoulders • A Pump To Recycle Waste Water • How To Make A Wood-Turning Lathe And Lathe Tools • Tempering High-Carbon Steel • Making Carbon-Tipped Tools For Wood And Metal-Turning Lathes • How To Drill Square Holes • Making Hand-Held Punches • Christmas Tree Candle Holders And Decorations • Making Design Layouts For Punches • How To Make Miniature Chisels And Punches • A Punch To Cut Small Washers From A Metal Strip • Makeshift Bearings • Making Accessory Tools For The Wood-Turning Lathe • Wire-Straightening Tools • Files, Rasps And Grindstones • The Reverse Lathe • How To Recycle And Operate A Metal-Turning Lathe • The Trip-Hammer And Its Use • Making A Pair Of Insets To Forge A Gouge Blade • Making Trip-Hammer Insets From Trolley Rail • Trip-Hammer Upsetting • Inserts Mad From Car Axle Flange Endings • Sharpening Tool Edges

One Incredibly Talented Man...

The modern blacksmith must learn to do by himself what the old-time blacksmith and his helper did as a trade. It is this that Alexander Weygers teaches here: how to use the basic techniques and tools available and resort to whatever can be invented, improvised, and constructed to make "things" out of "nothing."

The 600 illustrations represent, as nearly as possible, live demonstrations in the shop. They are intended to show *how* something can be done: not the only way, but one of many possible ways. Above and beyond showing how, the *why* is stressed as of overriding importance.

• Alexander G. Weygers, born in Java and educated in Holland, was schooled as a professional mechanical engineer and shipbuilder. His training required advanced skill in all crafts practiced in the machine shop, including excellence in old-fashioned blacksmithing.

After practicing engineering in Indonesia and the United States for some years, Mr. Weygers

then turned to the Fine Arts. He began as apprentice to Lorado Taft in Chicago, where he learned classical sculpture. In Paris he studied the nineteenth-century craft of engraving wood engraving, then marble carving in Florence, Italy, and anatomy at the Fine Arts Academy in The Hague, Holland.

For the past thirty years Mr. Weygers and his wife have lived in Carmel Valley, California, in the unique studio-home he designed and built single-handedly. Here he began making his own tools to suit his specific requirements for stone- and woodcarving and wood engraving. Artists and craftsmen from far and wide have purchased his custom-made hand-forged tools, and have sought him out as teacher.

Mr. Weygers believes that anyone who is dexterous by nature can become his own teacher by following diligently the guidelines in THE MODERN BLACKSMITH and Mr. Weygers' earlier book, THE MAKING OF TOOLS.

Meet Dave Gingery



One day Dave asked me if I was interested in offering his series of books on building machine tools from scrap for practically nothing. They're written for the guy who'd love to buy a lathe but is broke — in other words, most of us. He told me he had been building lathes for more than 20 years!

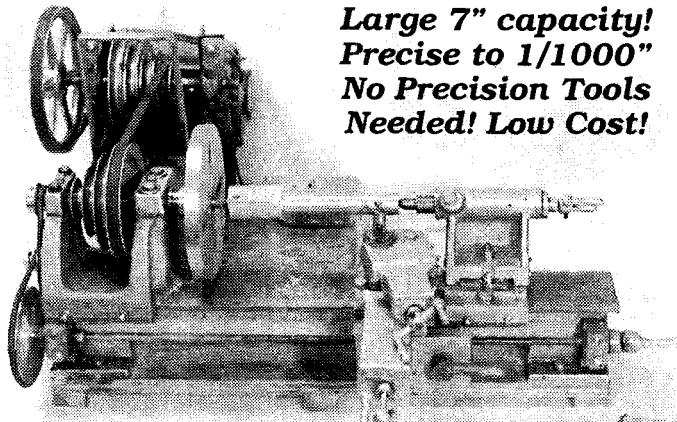
I said I was interested, but as usual, a little skeptical. When I saw his books, I was amazed. And I'm still amazed.

Dave has proven that you can start with simple handtools and can build precision machine tools. First, you set up a simple foundry and pour castings to build a lathe. You then use the lathe to build the shaper which will cut the dovetails, T-slots, and gears for the milling machine. Next, you build the drill press. Finally, you can go back and build the accessories you need for your lathe and other tools: dividing head, screw-cutting gears, chucks, and lots more. A handy sheet metal brake is thrown in for good measure.

Dave is magician! Give this guy a file, your aluminum storm door, and some charcoal, and he will turn it into precision machine tools! And he has shown thousands of others how to do it too!

As you build each machine, Dave teaches you new skills in foundry, mechanics, and machining. When you're done, you end up with a complete machine shop that you have built, you can use expertly, and you can repair should something go wrong. And best of all, you're a pretty darned good machinist.

I've never seen a series of books like this, and I don't think I ever will again. I may sound like a sideshow barker, but it's all true. Dave's books have become metal working classics. If you don't have a complete set yet, order those you're missing. Don't put it off.



**Large 7" capacity!
Precise to 1/1000"
No Precision Tools
Needed! Low Cost!**

Build Dave Gingery's Metal Lathe!

BUILD A METAL LATHE

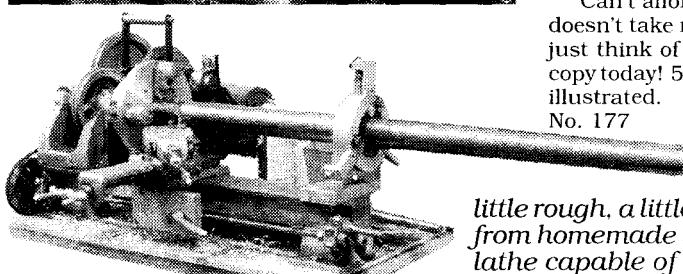
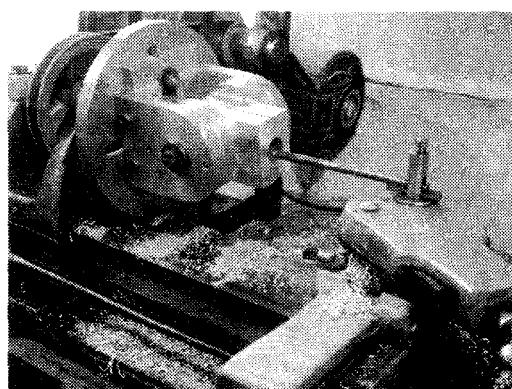
by Dave Gingery

Build a sturdy, precision metal cutting lathe for much less money than you'd pay for one of those "toy" lathes on the market. The only precision measuring equipment you need is a feeler gauge. You DON'T need any machine tools. In fact, Dave built the two prototypes for less than \$50 each just a few years ago!

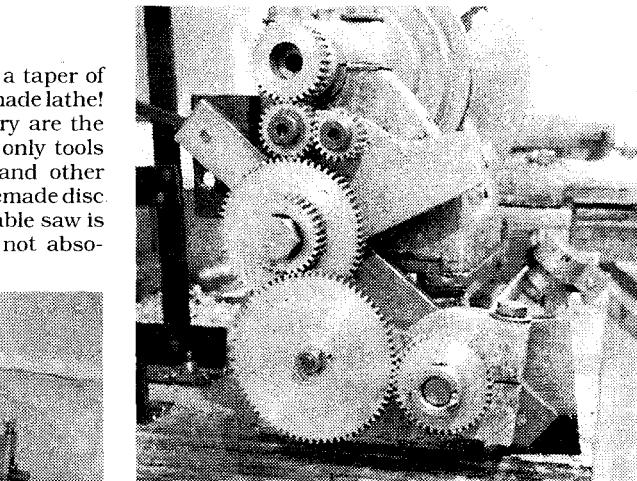
Your lathe will have a 7" swing over the bed, about 5" over the saddle, with 12" between centers. You can bore the headstock spindle and tailstock to No. 1 Morse taper if you wish. You can scale it up but you'll need larger castings than the charcoal foundry can provide.

I had a chance to use one of the prototypes. After a pass across an 8" long steel bar, my micrometer showed a taper of less than .001". Not bad for a \$50 homemade lathe!

Castings from your charcoal foundry are the secret of building a quality lathe. The only tools you need are an electric drill, files, and other handtools along with a very simple homemade disc grinder fully described in the book. A table saw is very handy for making patterns, but not absolutely essential.



see DELUXE ACCESSORIES for change gear fabrication...



You will use this simple lathe to build the metal shaper, milling machine, drill press, and the fancy accessories. You get no chuck or screwcutting gears. Dave will show you how to build them and much more in the book on deluxe accessories. They make life easy, but Dave will prove that they're not absolutely essential.

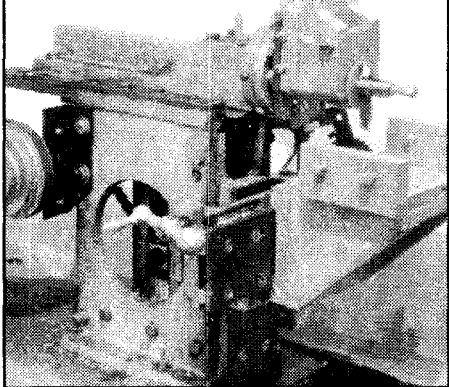
Can't afford to buy a lathe? Then build one. It doesn't take much money, just lots of hours. And just think of the bragging you could do! Order a copy today! 5 1/2 x 8 1/2 softcover 128 pages heavily illustrated.

No. 177

\$9.95

This is no toy! It may be a little rough, a little unpolished having been built from homemade sand castings, but this a solid lathe capable of heavy duty machining.

**5" x 5" Capacity
6" Stroke
Versatile!
Powerful!**



Build Dave Gingery's Metal Shaper!

BUILD A METAL SHAPER

by *Dave Gingery*

You may have heard that shapers are obsolete. Say that to someone who owns one! I dare you!

Truth is, there is hardly a cheaper, quicker way to cut keyways, splines, gears, flat and angular surfaces, dovetail slides, irregular profiles and more. Most of this can be done on a milling machine, but often the milling machine must use an expensive cutter. A shaper, for instance, can use a 50¢ piece of tool steel to cut gears. Forget the expensive cutters.

You can build an excellent metal shaper with a 6" maximum stroke and a mean capacity of 5" by 5". The tool head rotates through 180 degrees for angular cuts, and features a graduated collar with a simple lock. The down feed has a graduated collar, and the exact stroke length can be set. Your shaper will have variable speed, automatic variable cross feed and adjustable stroke length. It will be a machine worth bragging about.

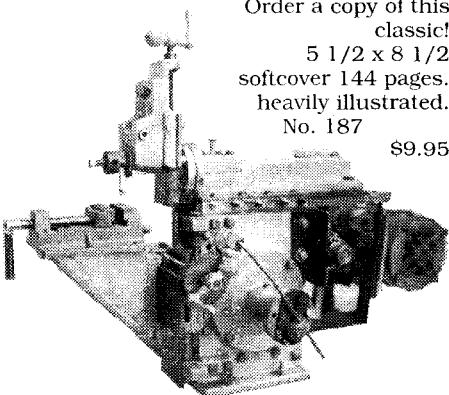
You get all the pattern plans, all the secrets, and all the details. You'll need the charcoal foundry and Gingery's metal lathe or its equivalent. Like Gingery's other books, this one is jam-packed how-to. Great book!

Order a copy of this classic!

5 1/2 x 8 1/2 softcover 144 pages. heavily illustrated.

No. 187

\$9.95



Shaper Operations

is unbelievable. This book gives simple step-by-step instructions on "impossible jobs". I've never seen any of the operations described better. And most of it I've never seen attempted at all. Most of the machinists who knew how to run a shaper are dead. And even if they were alive few of them would be able to deliver such clean, no-nonsense instruction. If you have a shaper, you should have this book. And if you read this book, you will want to buy or build a shaper.

—DAVE GINGERY

SHAPER OPERATIONS

by *J. W. Barritt*

reprinted by Lindsay Publications

Good information on running a shaper is very hard to find. The last shaper booklet of any quality was produced by South Bend Lathe, but it's no longer in print. But here's something I think is even better.

You get "job ticket" lessons published in

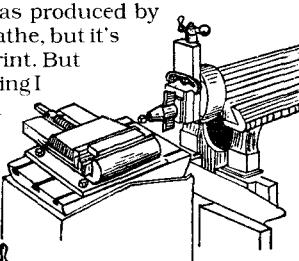
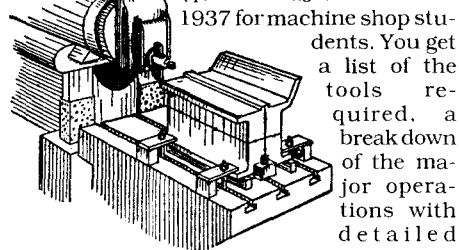


Fig. 2. The gib is shown resting on parallels and held in the vise, and the rocking table set at the approximate angle.



1937 for machine shop students. You get a list of the tools required, a breakdown of the major operations with detailed steps in each operation, followed by quiz questions to test your knowledge. Each job is accompanied by illustrations and "blue prints" to show you how the work is mounted and machined.

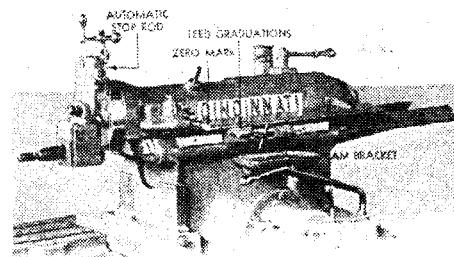
When you're done with each of these lessons, you should be very comfortable, if not expert, in running a shaper.

Get yourself a copy of this. Gingery's "How to Build a Shaper", "Advanced Machine Work", "Lathe and Planer Tools", and other books in this catalog and get to work. Not only is there lots to be learned, there is a lot of fun to be had! Order a copy and get started! 8 1/2 x 11 softcover 55 pages

No. 21036 \$7.95

STEP-BY-STEP LESSONS:

Machine plain surface on cast iron; Machine a plain surface on cast steel; Machine three surfaces with one setting; Machine a rectangular cast-iron block all over; Machine a cast-iron angle plate; Lay out and machine a cast-iron cylinder; Lay out and machine a tool steel V block; Machine a brass bracket; Cut a keyway in shaft; Cut a keyway in gear blank; Cut a deep slot; Machine a concave surface; Machine a concave surface of large radius; Machine a driver of machine steel; Cut a tool steel cam; Machine a cast-iron foot; Machine a steel wedge; Machine a taper gib; Machine a cast steel block; Cut a T slot; Cut a rack



SHAPERS!

SHAPERS

by *Emanuele Stieri*
reprinted by Lindsay Publications

No doubt, Stieri produced this in 1943 to train machinists in the shortest possible time for war production.

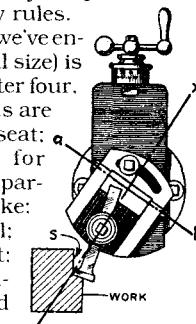
Contents include classification and construction of shapers; shaper tools; holding the work; elementary shaper operations; the vertical shaper; elementary vertical shaper operations; description of a modern shaper; shaper maintenance; description of a modern vertical shaper; general description of the Pratt & Whitney shaper drive to the machine; and safety rules.

This little handbook (we've enlarged it from its original size) is quick and dirty. In chapter four, for instance, the sections are titled: testing the work seat; testing solid jaw for squareness; setting vise parallel with direction of stroke; selecting the proper tool; taking a horizontal cut; adjusting the work; adjustment of stroke; and on and on.

This not only tells you how to run a shaper, it does it quickly and clearly. You get a how-to book that is easy-to-read. If you have a shaper, get a copy of this. Or if you intend to build Gingery's shaper, this a must-have companion book. Excellent. Get a copy. 4 3/4 x 7 softcover 180 pages

No. 21460

\$8.95



PACKAGE PRICE!

"Build Your Own Metalworking Shop from Scrap"

ALL SEVEN GINGERLY BOOKS:

Build a Charcoal Foundry, Lathe, Shaper, Drill Press, Milling Machine, Deluxe Accessories and Sheet Metal Brake!

Save \$6.15

No. 929 \$59.50

MILLING MACHINE

by Dave Gingery

Dave can tell the story best:
"It's a horizontal miller, but it has the full range of vertical mill capability when used with the angle plate on the work table. Home shops will find a horizontal mill and a shaper to be not so nearly obsolete as the "experts" say, and even the smallest shop would soon outgrow one of those little toy vertical mills.

The work table 2 3/8" x 12"

Build Dave Gingery's Milling Machine!

with a 3/8" T-slot, and it travels a full 12". The carriage travels 6 1/2" with the tail stand in use, and 8 1/2" with it cleared away.

It took over a month to design the transmission, and it works beautifully! Eight speeds ranging from 43 rpm to over 2430 rpm. I know of no other small miller except the Dore-Westbury that has such a range... The highest speed in the low range is 270 rpm, and it made a .035" cut in the end of the compound with the face mill set at a 3" diam-

wasn't strained in the least amount. That's after several passes over a sandwich of 1/4" steel top and bottom, and an inch of aluminum between.

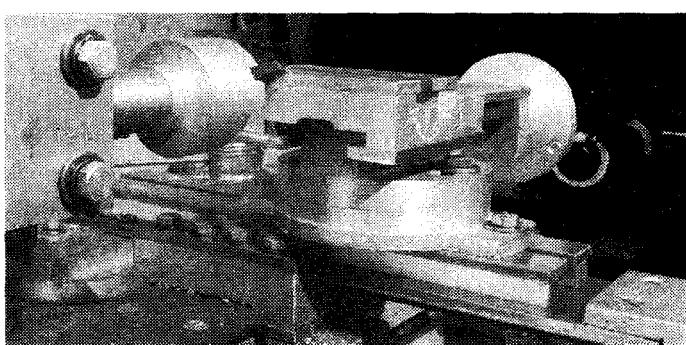
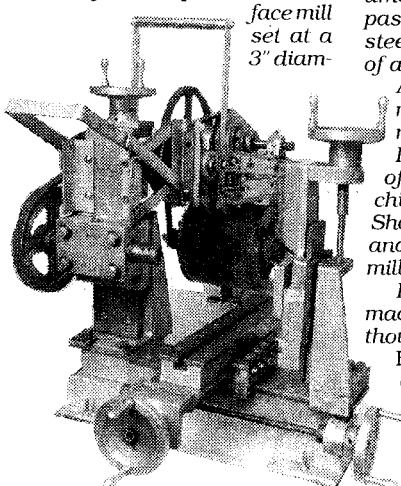
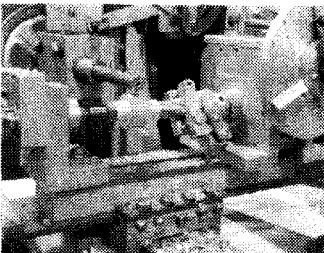
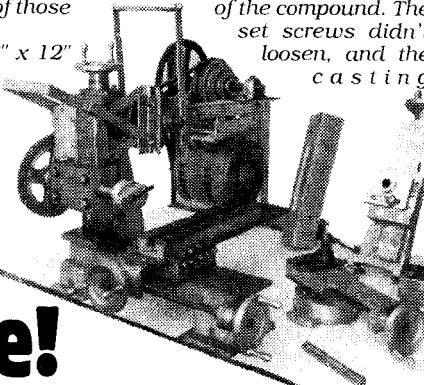
Anything is possible. It can make jigs or fixtures that are needed for any kind of work. It can make any type of style of cutter. You could even machine a blank or a Brown & Sharpe gear cutter, mill the lands, and grind the cutter right on the miller.

I'm really excited about this machine. It's much more than I thought possible when I began."

Build yourself a milling machine! Order a copy of this. It's worth twice the price. 5 1/2 x 8 1/2 softcover 160 pages No. 1128 \$9.95

eter at that speed with no squawk or chatter.

I made the cutter on the lathe, but the miller is designed to make its own cutters for nearly every purpose. This cutter adjusts from 2 1/2" to 4 1/2". It's an aluminum casting, and it was cast with a steel core to leave the slot for the cutter bit. It shows no sign of failure after planing off the end of the compound. The set screws didn't loosen, and the casting



DIVIDING HEAD & DELUXE ACCESSORIES

by Dave Gingery

Now that you've built the lathe, shaper, milling machine, and the drill press at almost zero cost, it's time to build the fancy accessories.

Chapter one covers "Tooling Up." You get a list of supply sources and helpful books, a review of basic tooling, and a series of simple lathes tools: compact clamp dog, heavy face plate, homemade hand reamers, a set screw chucks, expanding and threaded mandrels for facing gear blanks and for cutting teeth, plus a simple fixture for tapping truly perpendicular holes by hand.

The second chapter will show you how to build a simple two-jaw chuck that can be self-centering for repetitive work and a four jaw chuck with indepen-

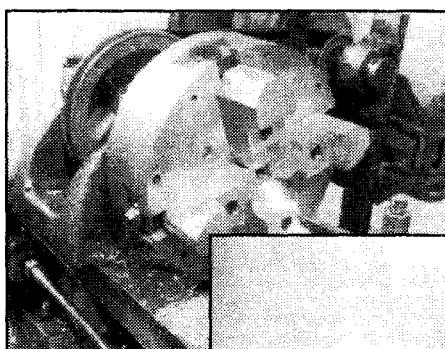
standard 40 tooth worm gear, providing all divisions through 50 and all even and multiples of 5 through 100. Many other divisions up to 1960 are possible, and it's easy to make a special plate for an unusual job. You'll be shown how it works, why it's so accurate, and how to build it and use it. The directions for drilling the fraction plates are especially valuable because they can be adapted to building a variety of other indexing fixtures.

Next, you'll cut professional quality change gears to add screwcutting capability to your homemade lathe. It's easy to machine the blanks to correct size and mill the tooth spaces. Dave will show you how to make gear cutters for about 50¢ each!

Finally, you'll be shown how to install these gears. A conventional tumbler plate provides left

Build Deluxe Machine Shop Accessories!

Indexing Head • Face Plate • Steady Rest
• Change Gears • Mandrels • Chucks • More!

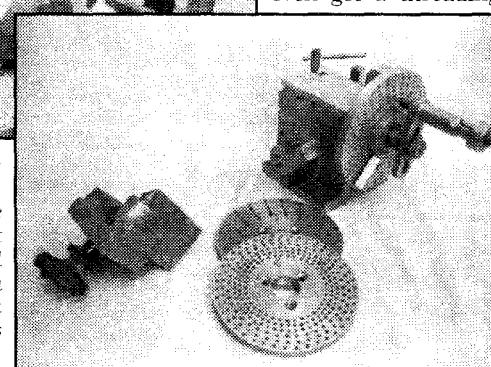


dent reversible jaws. Like Dave says, "You'll be glad you didn't blow your bait and beer money on a chuck when you see how easy it is to build one."

Next, you'll build a steady rest. This almost-essential accessory expands the capacity of the lathe for work that is too long to be mounted between centers. It's worth many times its small cost.

Then, you'll build the dividing head that serves as a rotary table, too. Few home shops have such an accessory, but you will. This beauty is built around a

hand thread cutting, while the basic set of gears cuts all threads of standard inch sizes from 8 to 80 tpi. A fine feed range from .0025" per revolution to .005" is also provided. You even get a threading



indicator for the carriage so that you can engage the split nut at the proper moment. It really is easy to add change gears once you know how, and Dave will show you everything.

Incredible quality! Rare how-to! Order a copy today. 5 1/2 x 8 1/2 softcover 159 pages No. 1153 \$9.95

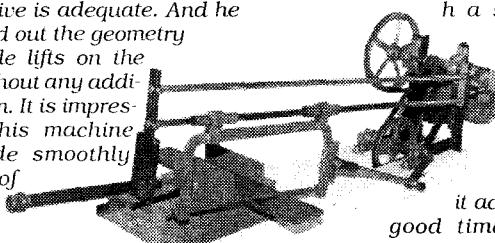
Vince Gingery's

Power Hacksaw!

BUILD A POWER HACKSAW WITH VISE

by Vincent Gingery

Dave wrote me some time back. "Vince has demonstrated that a reduction belt drive is adequate. And he somehow worked out the geometry so that the blade lifts on the return stroke without any additional mechanism. It is impressive to watch his machine stroke the blade smoothly through a slab of steel. And it does it accurately and in too."



it ac-
curately
good time
too."

This is a 60 strokes-per-minute portable machine that uses a 14 tpi blade that will cut a 1/4" x 3" flat bar in a couple of minutes, yet weighs little more than 50 pounds. You'll need a 1/3 hp 1725 motor. Standard pulleys, belts and pillow blocks reduce the drive to 278 rpm. The only special equipment necessary is a 100 amp welder. All holes are drilled and tapped, so a drill press would be a great help, although not essential.

This is a Gingery-quality manual. You won't find better how-to anywhere. And this is a proven machine. Build one! Order a copy. 8 1/2 x 11 softcover 66 pages

No. 1312

\$8.95

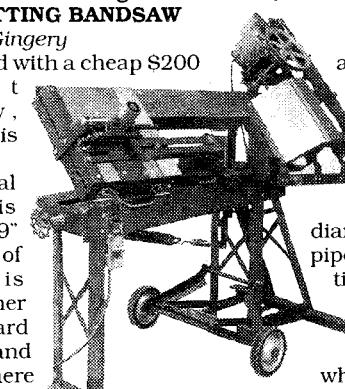
Build the Gingery Bandsaw!

Designing and Building a Horizontal/Vertical METAL CUTTING BANDSAW

by Vincent Gingery

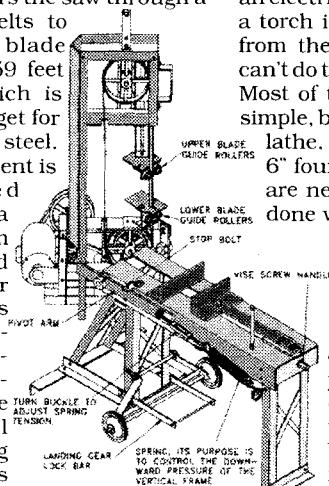
Disgusted with a cheap \$200 import bandsaw, Vince built his own.

The actual saw table is 36" long and 9" wide. Most of the saw is bolted together from standard angle iron and strap, but there are a few welds. A 1/2 hp 1750 rpm motor powers the saw through a series of belts to achieve a blade speed of 159 feet per minute which is right on target for cutting mild steel. Rate of descent is controlled through a mechanism build around a garage door spring. This of professional quality and performance with ball bearing blade guides and all the rest. You may want to design



and build a coolant pump and catch pan.

You need at least a nine inch lathe. The drive and idler wheels were fabricated from 8" diameter 3/8" thick steel pipe. They had a devil of time chucking sections in the lathe in order to turn them, but they pulled it off. The wheels drive a 14 teeth per inch raker of 94" length. You'll also need a hacksaw, an electric drill, a drill press, and a torch is handy to cut section from the 8" pipe if your lathe can't do the job with a cutoff tool. Most of the machining is quite simple, but you need at least a 9" lathe, a 6" 3-jaw chuck, and a 6" four jaw. Only a few welds are needed, and they can be done with 75 amps.



No. 1381

\$12.95

THE DRILL PRESS

by Dave Gingery

Build a professional quality drill press! It's a beauty! Dave describes it:

"I can't believe the capability of this machine. I put a 5/8" bit in the chuck, and it drilled through a 1/4" steel channel without a pilot hole. My wife said it looked like it was cutting cheese instead of steel."

Note the double reduction that gives a low speed of 260 rpm. That's why it can drill large holes in steel. I'm certain it can drill a 3/4" hole, and it may be capable of drilling up to a 1" in steel. I don't have a larger bit to test. All of the small drill presses that I've seen have a low speed around 700 rpm. That means they only have a capacity of 3/8" in steel, even if they do have 1/2" chuck.

The spindle is mounted in ball bearings, and so is the countershaft for the double reduction. The driven pulley is mounted on a hollow shaft, supported by its own 1" ball bearings to run concentric with the spindle. No belt tension is transferred to the spindle.

The quill feed is 2 1/2", and it can be made longer. The quill is advanced by a unique cable winch mechanism. This is only a 1/16" cable, though it had ample strength to feed the 5/8" bit to produce a closely curled chip. It has provisions to adjust tension and backlash, which is very important for sensitive drilling with small bits at high speed.

The machine in the manual is a 12". It can easily be scaled down about a third or smaller, and it can be scaled up to a hefty floor model with ease. None of the castings used the full one quart charcoal foundry capacity, and all of them were machined on the homemade lathe. Only the spline on the spindle was done on the miller."

Sure, you can buy a drill press. But you'll pay an arm and a leg for one that can match this performance. Building this one is worth the effort. Great book! Order a copy and get started. 5 1/2 x 8 1/2 softcover 128 pages illustrated No. 1133

\$9.95

Run a Band Saw! Scroll Saw!

GETTING THE MOST OUT OF YOUR BAND SAW AND SCROLL SAW

edited by Sam Brown

reprinted by Lindsay Publications

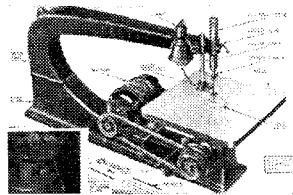
From 1937 comes this handy little booklet from Delta Manufacturing showing you how to use their band saw and scroll saw. You get a very heavily illustrated booklet of wall-to-wall how-to.

Chapters include the band saw, band saw blades, methods of working, metal cutting, scroll saw, scroll saw operations, sanding and filing and appendix.

You'll learn all the basic uses and techniques such as multiple sawing, ripping lumber, cutting thin metal tubing, aligning blades and much more. You get ideas for building jigs and supports, and even simple projects. Admittedly, this book is primarily for wood workers, but after seeing this, I'd really like to buy or build a large scroll saw. I might even saw out a profile of my mother-in-law's nose. (But I don't think they make sheets of plywood that big...).

Get a copy. Enjoy. Fun reading. Ideas. Low-cost. Order a copy today. 6x9 booklet 48 pages No. 21559

\$5.95



Build a Metal Lathe!

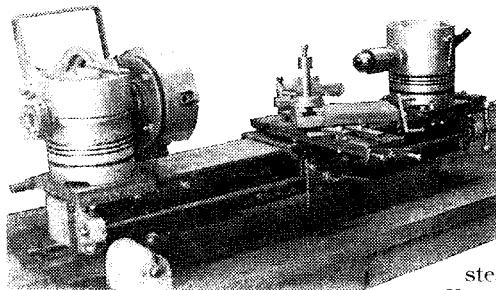
METAL LATHE

by Ben Fleming

You can build a precision lathe without castings that has almost a 10" swing over the three foot bed. And you can do it with little more than hand tools and a small drill press. A 3' bed provides about 22" between centers, but the bed can be extended several feet if you want. Four speeds are provided on the prototype. You get a compound rest, and a cross slide with about 4 1/2" of travel.

Ben writes in his manual, "No outside machining is required. The lathe is bolted together for all parts but three, which are brazed or welded together . . . The only 'precision' tool I used in the lathe construction was a good quality framing square. Using the construction methods as outlined in these plans, I was able to produce a lathe that, on its first test, showed only a .007 error, and with a few simple adjustments, can be brought close to a tolerance of .001."

Dave Gingery and Ben Fleming swapped ideas from the beginning. Dave comments, "His plan answers very well to the man who wants a larger lathe. Well thought out project.



and within the ability of the average do-it-yourselfer. I think."

Cost of the prototype was \$185. One of Fleming's design tricks is the use of large truck pistons instead of castings.

You get a detailed 49 page construction manual. You'll get recommendations, step-by-step instructions, hints and tips, as well as addresses of suppliers for tools and any special parts that you might need.

There is no provision for power feed on the lead screw, and therefore, this is not a screwcutting lathe. But by the time you build a copy, you might have figured out an ingenious way to add it. Even so, this is a powerful, precision lathe that can turn out quality work for you.

Following the text are many photos and layout templates to make the construction fast and easy. A fine lathe. Consider building one. At the very least put this book in your library. 8 1/2 x 11 softcover 49 pages well illustrated

No. 1212

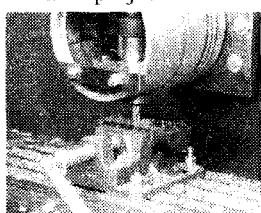
\$13.95

Build a Milling Machine!

VERTICAL MILLING MACHINE

by Ramah Machines

The proven construction techniques used in the "Nephite" lathe project have been used to build a powerful, precise vertical milling machine. The universal milling 6" wide 4" high table that you will build will provide 13" X



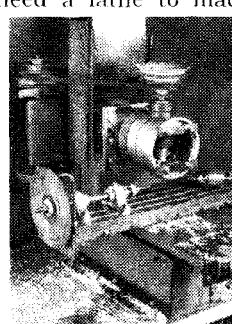
travel and 6 1/4" Y travel. And the table will allow milling at angles. Tests show that the maximum thickness of material that can be milled is 6 to 7". Four spindle speeds are provided with an optional high-low range. Max depth of cut in mild steel with a 3/8" four flute end mill was .035". A 1/2" two flute mill in aluminum cut .220" deep. Max height of the machine is 37" and

weighs in at about 260 pounds. It uses a 1/4 to 1/2 hp motor.

You'll need a lathe to machine the spindle, other than you'll need is usual press and held electric drill, plus usual tools. No castings.

A lot of valuable information for a low price. What would it cost to buy a mill? How many hours would you waste perfecting your own design? It's worth it. Order a copy today. 8 1/2 x 11 booklet about 85 pages.

No. 1209



valuable information for a low price. What would it cost to buy a mill? How many hours would you waste perfecting your own design? It's worth it. Order a copy today. 8 1/2 x 11 booklet about 85 pages.

No. 1209

\$13.95

ON DIVERS ARTS

by Theophilus

translated by Hawthorne & Smith

Theophilus probably wrote this in a Benedictine monastery in Latin on parchment about 1120, long before the printing press. What he wrote about was the creative technology of the day.

You can learn the tricks and techniques of painting, working glass, and working metal. You get details on mixing pigments for various hues, working gold and tin leaf, applying leaf to books, making ink, making glass, details of the furnace, the composition, spreading out glass sheets, making long-neck flasks, coloring glass, gutting, annealing, glass molds of iron, assembling windows and much, much more.

In metalworking you learn about anvils,

Ancient Secrets!

bellows, hammers, engraving tools, punches, files, hardening files, crucible for gold and silver, milling gold amalgam, setting gems and pearls, refining copper, separating gold from silver and copper, and much more.

Each section is short, but gives the essential details. The original illustrations have been reproduced. Also included are photos of typical work from 1100's. This is a beautiful combination of solid technology, myth, and folklore, just as it was. An unusual book. Lost secrets! Interesting reading. Reasonably priced. 6 x 9 softcover 45 illustrations. 216 pages.

No. 160

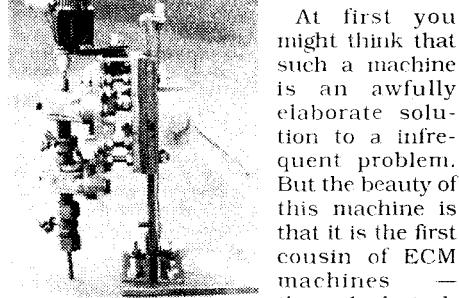
\$9.95

Metal Disintegrator

METAL DISINTEGRATOR

by Ramah Machines

When you snap off a drill, tap, or even a stud deep in a block of steel, you're in trouble. It's a first class pain in the neck to remove it. But it's easy with this metal disintegrator. Essentially this is a vibrating engraver driving a commercially available electrode into the metal. An electric spark eats away the metal, leaving a clean hole.



At first you might think that such a machine is an awfully elaborate solution to a infrequent problem. But the beauty of this machine is that it is the first cousin of ECM machines — those high tech

devices that perform machining miracles. This might be a starting point for the development of a small home shop ECM machine.

The disintegrator is built from commonly available materials. A lathe or milling machine is not required. You get details on assembly of the vibrating head, electrode selection, fabrication of water flow device, power supply, and much more. The prototype cost \$275.00 with new equipment, and that's a lot less than \$7000 for a commercial unit.

Again, if you don't need a disintegrator, the ideas and info here should be useful in investigating ECM concepts. Very unusual device. Small but excellent booklet. Worth its price. 8 1/2 x 11 booklet 34 pages with photos and drawings.

No. 1277

\$10.90

A Money Maker!

Mr. Lindsay:

I built Benjamin Fleming's metal disintegrator and use it often. I work as an automotive machinist and broken bolts are an occupational hazard. I still drill them out. (When you're good, you're good.) But those that clumsy mechanics have broken off - taps, drills and (the notorious) easy-outs - are no longer beyond salvage. I fire up the "tap burner" and before you can say "thanks, Mr. Fleming", it's out. I then get to say "that'll be \$25.00", which is half the going rate, and split the take with the boss. So far, this machine has paid for every book I have gotten from you and I hope to make it build a much bigger library...

J. L., Fort Worth TX

Secrets of **HAND SCRAPING**

OLD TIME MECHANICS
reprinted by Lindsay Publications

Back in the 1700's when you opened a machine shop, you didn't run out and buy a lathe and planer, you built them! Scraping was the skill necessary to produce absolutely flat and true beds and tightly fitting bearings. It was a skill that every mechanic learned, yet today few people have even heard of it.

Scraping is used on the



machines described in the Gingery series of books. Scraping is also the secret method used by Whitworth to produce large surface plates accurate to millionths of inch two centuries ago! It is a very valuable skill. The first half of this booklet deals with the surface plate and scraping.

Also reprinted are instructions for lapping, grinding valves and joints, making shrink fits and force fits, and for balancing pulleys, cutter heads, and emery-wheels.

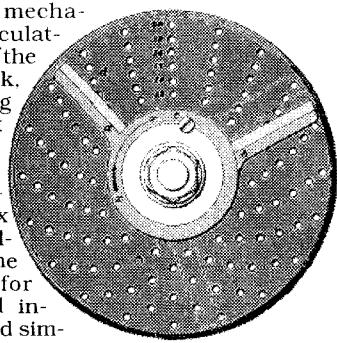
Get a copy! Learn about these old-time skills. This information is fast becoming lost technology. 5 1/2 x 8 1/2 booklet 15 pages No. 855 \$3.00

INDEXING!

INDEXING
reprinted by Lindsay Publications

Most of this booklet from 1903 covers indirect compound indexing.

You'll learn about construction of the indexing mechanism, calculating runs of the index crank, selecting the index circle, using the sector, using index tables, calculating the moves for compound indexing, and simplifying the moves.



The second section covers the use of the spiral head which at that time was an innovation marketed by Brown & Sharpe.

A final section covers fractional indexing using two indexing plates and special spiral head. Three more pages of indexing tables are provided.

Some of the information should be quite useful to you. Some will not, but even so, what you learn should expand your knowledge to allow you to make more creative use of the dividing head you do have. Loaded with valuable info! Reasonably priced! Get a copy today 5 1/2 x 8 1/2 booklet 31 pages No. 869 \$4.00

Amateur Work Magazine



AMATEUR WORK MAGAZINE
reprinted by
Lindsay Publications

Apparently at the turn of the (last) century Amateur Work Magazine wanted to be the equivalent of England's Model Engineer or today's Home Shop Machinist magazine. Every month the subscriber received a magazine describing interesting projects and how-to. I don't think this compares to Model Engineer in quality neither then nor now. But nevertheless, there WERE some very interesting articles offered.

Here I've extracted the best articles from 1904 issues and have reprinted them in one low-cost volume. There's something here for everyone, from acetylene generators and crystal detectors to hand milling machines and steam turbines.

What knocked my socks off were page after page of plans for a light gasoline car with an 80" wheel base driven by a two-cylinder engine having a 4" bore and 2" stroke and sliding gear transmission. All the drawings were dimensioned. Certainly, this isn't step-by-step how-to, but these are fascinating plans of an auto back before Henry Ford started up. Imagine building a version of this and driving into a model engineering exhibition. You would be the star attraction.

And there are other interesting projects from building a dynamo, gas engine spark coils, making electrotypers, soldering, model steamboat and all kind of goodies. All of this is well-illustrated. I doubt that you would build any project from this book as presented. You would want to modify it, and you will need some imagination. After all, this isn't Gingery-style how-to.

This is a fun book to just thumb through and dream. You should have a copy. You'll

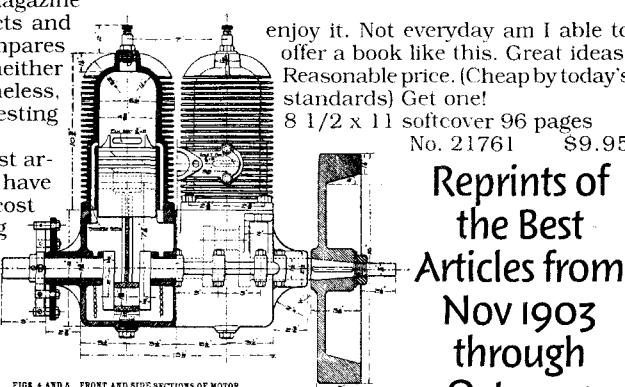
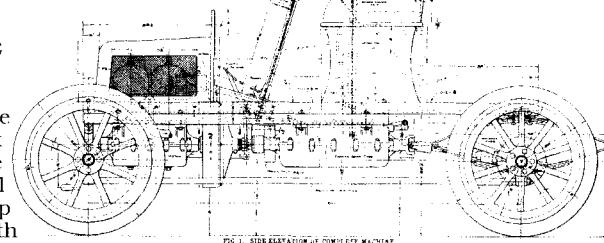


FIG. 4 AND 5. FRONT AND SIDE SECTIONS OF MOTOR.

enjoy it. Not everyday am I able to offer a book like this. Great ideas. Reasonable price. (Cheap by today's standards) Get one!

8 1/2 x 11 softcover 96 pages
No. 21761 \$9.95

**Reprints of
the Best
Articles from
Nov 1903
through
Oct 1904**

CONTENTS

- Gas Engine Spark Coils • Bench Micrometer • Model Steam Turbine • Electrical Flash Lamp • Magic Lantern • Simple Balance • Set of Weights • Acetylene Generator • Jolly Balance • Cylinder Printing Press • Thermit • Model Steamboat • Soldering • Oil Immersed Condenser • Wireless Telegraph Receiver • Sensitive Relay • Spectroscope • Hot Air Engine • How to Make Electrotypers • Model Turbine Engine • Attachments for Lathe • Bench Grinder • Light Gasoline Car • Wireless Telegraph Apparatus • 80 Watt Dynamo • Casting in Soft Metals or Alloys • Sensitive Galvanometer • Storage Battery • Hand Milling Machine • Telephone Circuits & Wiring • Rowing Skiff • Bench Trimmer & Saw Block • Tool Sharpening Device

GETTING THE MOST OUT OF YOUR LATHE

edited by Sam Brown
reprinted by Lindsay Publications

Another Delta publication from the 1930's! And it's great. If you have "Getting the Most Out of Your Scroll Saw" or "Abrasive Tools", you know exactly what this is about.

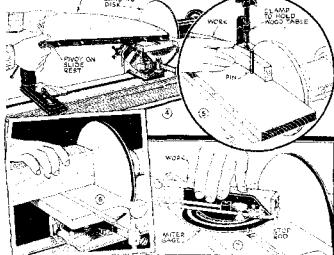
Only it's lathes. lathes and more lathes. Wall-to-wall illustrations, practical how-to and easy-to-read text.

The wood turning section covers the lathe and equipment, spin dle turning, faceplate and chuck turning, special turning operations, jigs and fixtures, using lathe attachments, and wood finishing.

Getting the Most Out of Your Lathe

The metal turning section covers equipment for metal work, operations in metal turning, miscellaneous metal operations.

And a section on turn-

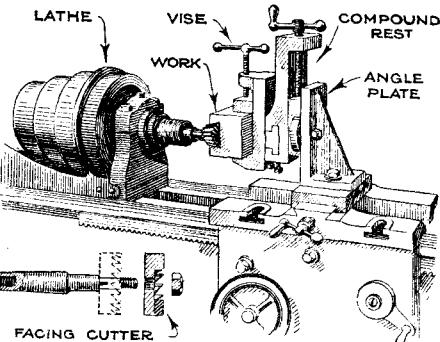


The Photographs Above Show a Few of the Many Uses of Sanding Drums on the Lathe. The Drawing Pictures Typical Operations Using the Adjustable Sanding Table in Connection with the Sanding Disk.

ing delivers spinning equipment, methods of working, and special spinning chucks.

If you're an experienced worker, you'll may find this a bit too simple. After all I suspect Delta enclosed this booklet which each new lathe they sold. It was intended for the beginner (which we all are to one degree or another). Fun reading. Lots of ideas. Well illustrated. And low cost. Get one. 6x9 booklet 48 pages

\$5.95



Compound Slide Rest, Mounted on an Angle Plate, Converts the Lathe into a Milling Machine. The Work is Held in a Tool Vise, and Standard Milling Cutters are Mounted on a Taper-Turned Arbor, Fitting into Headstock Spindle

Popular Mechanics LATHE HANDBOOK NO. 1 - 1925

reprinted by
Lindsay Publications

Great book! Incredibly fun to read!

You get a compilation of metal lathe articles that ran in the pages of Popular Mechanics magazine in the early 1920's. The articles are interesting and informative, the ideas they generate are valuable, and the illustrations are even better!

Lathe Handbook No. 1

Lathe Hints & Tips from 1925

Page one starts with a detailed article on building a 6" bench lathe. Then you get dozens and dozens of smaller, well-illustrated articles describing a simple chip shield, auto hub as lathe and drill press, special lathe tools and attachments, lathe

tool for radius cutting, simple relieving attachment for the lathe, and more. Learn how to make a tool holder with a set of cutters, a revolving tool holder for the lathe, a lathe center-hole mandrel, ball-bearing tailstock center, adaptable jig for turning pulleys in a lathe, and on and on. Hold small screws in the lathe. Build a adjustable universal chuck. And there's much more - from straightening a bent reamer to milling flutes in taps and reamers.

A n y machinist will enjoy just looking at the incredible illustrations. You'll like it! It's inexpensive, and definitely

worth having. Order a copy!

6x9 softcover 87 pages

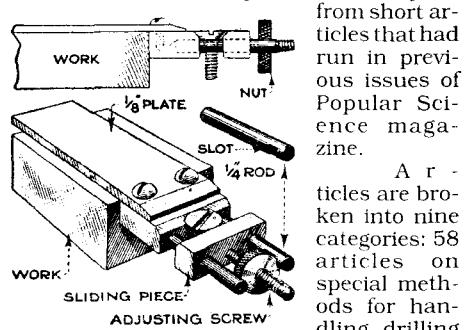
No. 20838

POPULAR MECHANICS DRILLING AND THREAD CUTTING HANDBOOK NO. 1 - 1925

reprinted by Lindsay Publications

"A compilation of 301 experiences in the drilling of metal and the cutting of threads, showing not only how to use drills, and tapes and dies, but how to make devices for special requirements in this work. With 298 illustrations."

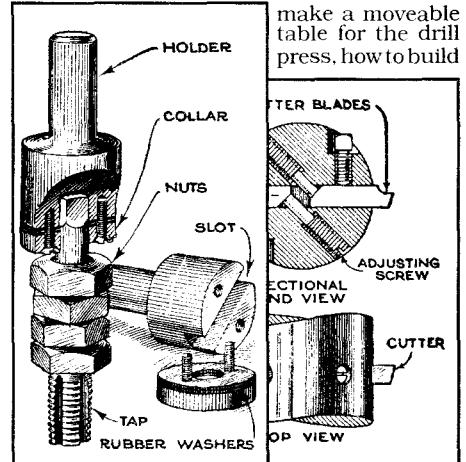
If you've seen PM's Lathe Handbook No. 1 elsewhere in this catalog, then you know what this is. It's a companion text compiled from short articles that had run in previous issues of Popular Science magazine.



A r ticles are broken into nine categories: 58 articles on special methods for handling drilling and boring jobs, 75 articles on special tools and devices for drilling, 31 articles on how to make drill bits and boring bars, 23 articles on ideas on drill presses, 22 articles on special methods of reaming and broaching, 18 articles on methods and devices for thread cutting, 15 articles on taps and how to handle them, 16 articles on dies and how to handle them, and 43 articles on unusual drilling and thread cutting jobs.

Drilling & Thread Cutting Handbook!

The very first article describes boring large holes in glass. But you'll also learn how to cut oil grooves in pulleys, how to locate holes where a scribe can't be used, how to



make a moveable table for the drill press, how to build

a rapid jig clamp, how to make a homemade flexible shaft boring machine, and much, much more.

I'm sure a lot of this stuff is practically useless. So what? Even if you never use anything in this book, the short stories and dynamite illustrations will keep you entertained for hours! Great stuff. Definitely worth having. Order a copy! 6x9 softcover 94 pp No. 21117 \$7.95

Making the Small Shop Profitable

Fun Reading! Practical!

MAKING THE SMALL SHOP PROFITABLE

by John Van Deventer

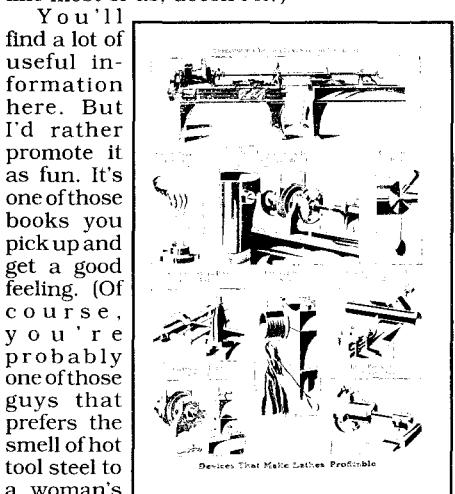
reprinted by Lindsay Publications

In American Machinist magazine before World War I ran a series of articles on the small shop. They were so popular that the articles were reprinted in this entertaining book. I can't guarantee you that this book will make you any money, but I'll guarantee that you will find it fun reading!

You get 72 different articles, most illustrated, covering such topics as ideas for the small shop blacksmith, chucks and turning, various ways of pulling keys, end mill for babbitt, prevent lateral shrinkage in aluminum casting, profit making devices for turning, boring

and turning kinks, the small shop grinding wheel, knurling in the small shop, getting "into" the small shop, making patterns and castings for the small shop, boring pump chambers in the drilling machine, a variety of expanding arbors, slide rest kinks and cutting tool stunts, and much more.

The last 50 pages or so are completely filled with drawings that will give you more ideas than you can handle in one sitting. This is meant to be educational, directly aimed at the one or two-man shop struggling with less-than-the-best equipment and less-than-adequate education. (Sounds like most of us, doesn't it?)



You'll find a lot of useful information here. But I'd rather promote it as fun. It's one of those books you pick up and get a good feeling. (Of course, you're probably one of those guys that prefers the smell of hot tool steel to a woman's perfume. Hopeless...) So just don't sit there. Order a copy of this, and THEN sit there. Enjoying. You'll like it.

8 1/2 x 11 softcover 113 pages

No. 21044 \$9.95

Shop Notes for 1919

POPULAR MECHANICS SHOP NOTES FOR 1919

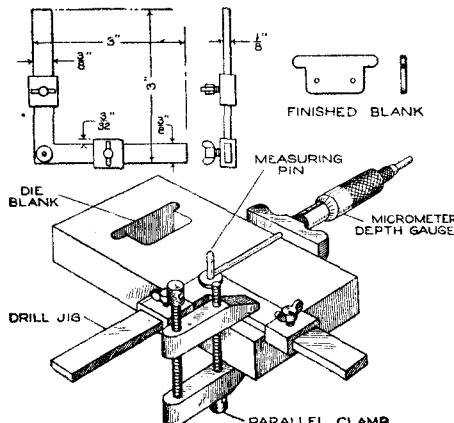
by Pop Mechanics Magazine

reprinted by Lindsay Publications Inc

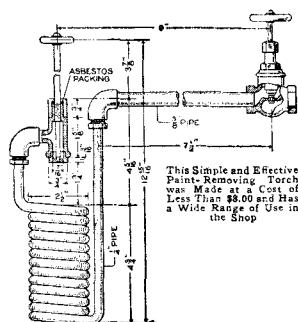
Here you get a collection of short illustrated articles from the pages of 1919 Pop Mechanics magazine on how to build everything from a spot welder to an air boat. Actually, most of the articles are just a paragraph with an illustration. You're expected to have some mechanical expertise so that you can fill in the details.

You may have seen the famous series of Shop Notes that were common in the 30's, 40's and 50's. This is their grand-daddy. It's kind of like the Boy Mechanic for grown men.

You get page after page of hints and tips for building a water barrel mixer, revolving feed mixer, a nine-foot runabout, horse stalls, garden sprayer, gasoline torch, bottle cutter, a metal shear for the vise, rig for reborning engine



The Piercings on Dies are Located Quickly and Accurately by Means of This Jig

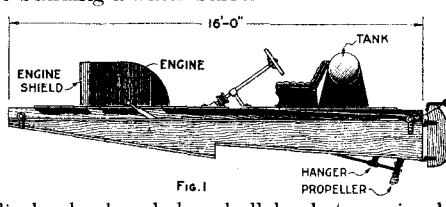
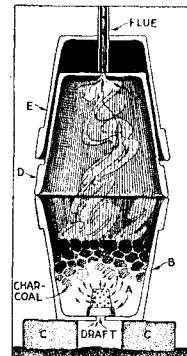
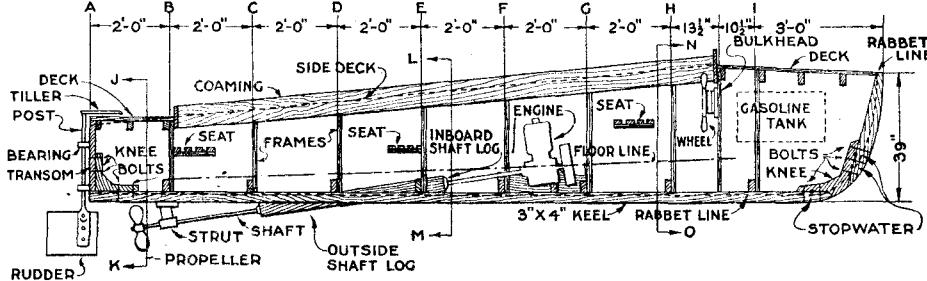


This Simple and Effective Paint-Removing Torch was Made at a Cost of Less Than 50¢ and Has a Wide Range of Use in the Shop

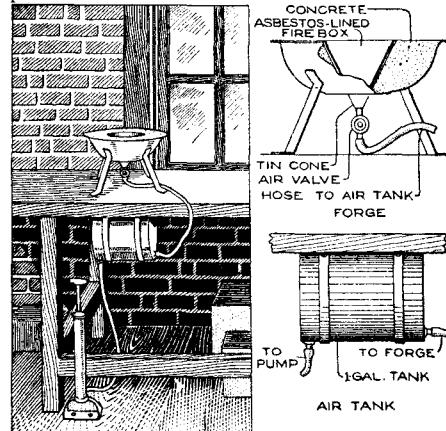
This stuff is old. Some of it useless unless you still drive a 1917 Maxwell and milk cows by hand. But much of it is timeless. It's about ideas. Even if you never build a thing, you'll have fun reading and dreaming, just like the Boy Mechanic series.

Great stuff. Wall-to-wall illustrations. Fun reading. Consider it carefully. 6x9 softcover 222 pages
No. 22040

\$14.95



cylinder by hand, baseball backstop, simple method for making core prints without a lathe, homemade paper bailing machine (great for recycling), power drill press from pipes and fittings, swamp-buggy-like boat with airplane propeller, resawing device for the bandsaw, homemade mechanical drafting machine, hydroplane catamaran and much, much more.



This Concrete and Asbestos-Lined Blast Forge, Made for Temporary Use, Became a Permanent Shop Fixture

Drilling and Surfacing Practice

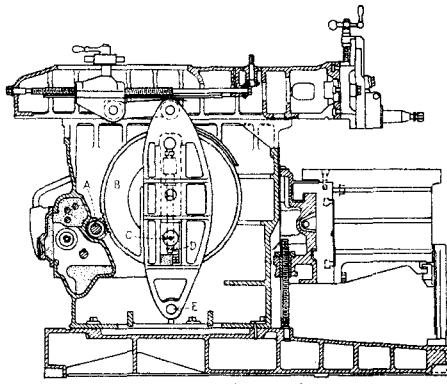


Fig. 58. -Section of shaper showing driving mechanism.

DRILLING AND SURFACING PRACTICE
by Colvin and Stanley
reprinted by Lindsay Publications

In July 1936, the dynamic duo spoke:
"This volume aims to show the development in drilling and surfacing practice and presents much information not hitherto available in compact form."

Chapters include: drills and drilling machines; drill points and troubles; drill shanks, speeds and feeds; general drilling information; deep-hole drilling; various drilling operation; types of drilling machines; design, construction, and the use of reamers; taps and screw threads; planers, shapers and slotters; care of planers; planer tools; methods of driving planers; planers and their work; shapers; shaper tools and work; the slotting machine; primary milling operations; general milling operations; types of milling machines; planetary milling machines; universal indexing centers; milling-machine attachments; cutting helices on the milling machine; milling cutters; milling cutters and their uses; cutters for milling large

plain surfaces; high-speed and other milling cutters; care of milling cutters; general information about broaching; commercial broaching; external or surface broaching.

As always you get tables, drawings, and photographs some of monster machines

and others of smaller equipment you and I would use.

Great It's entertain- it's fast reading. It covers a lot, but the dynamic duo come through again! I think you'll like it. Get a copy. 5 1/2 x 8 1/2 softcover 431 pages

No. 21729

\$19.95

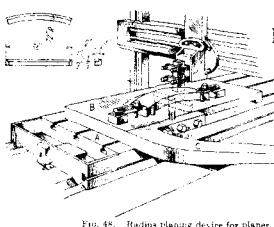


Fig. 48. Radius planing device for planer.

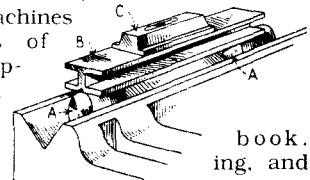


Fig. 3. -Using same equipment to check high or low spots on each side of bed.

BASIC LATHE

BASIC LATHE OPERATION (AND MORE)

with Steve Chellis
produced by Bob Bailey

Let Steve Chellis show you the basics of lathe work in this surprisingly good video. Chellis has been a journeyman machinist for more than 40 years, and for the last 15 years has operated Chellis Machine and Tool. He has trained a number of apprentices. Through this video you can be his latest.

You'll start out by examining the tools you'll need to layout work and cut threads. You'll take a close look at thread gauges, measuring wires, dial micrometers, center gauges, a surface plate, surface gauges, dial mikes, and more.

At the grinding wheel he'll show you how he cuts a lathe tool from a high-speed steel blank. Then you'll learn how to cut threads in the lathe, measuring as you go to ensure accurate, high quality work.

You'll watch Chellis mark out a steam engine eccentric which must be part of the 4" scale traction engine he is building. The eccentric is chucked in the lathe, the shoulders are turned down. After rechucking the eccentric, the casting is drilled and

bored. You'll watch each step, and he'll talk to you, giving you hints and tips, as he makes the cuts.

You'll see a set up he devised to bore what looks to be the crosshead for his engine. The homemade boring bar was made

copy. This and a good lathe book (plenty of them in this catalog) will get you going in the machining hobby. Consider this carefully. 61 minutes video VHS format (NTSC - will not play on PAL or SECAM systems)

No. 1350

\$32.95



from a 1 1/2" diameter hunk of cold rolled steel. You'll watch it zip through the casting.

You'll see other things, too. Watch him cut threads on the engine steam chest after getting the casting accurately positioned in the four-jaw chuck. You'll find useful ways to use a dial micrometer and center-finding wiggler. You'll get tips on using a steady rest as you watch him clean up a shaft and drill a new center hole.

The video quality is surprisingly good. The producer/publisher, Bob Bailey, has done an excellent job producing these tapes for such a specialized market. If you're expecting some bimbo to appear in leotards and do aerobics, fergit this. But if you want to watch metal chips fly, order a

VIDEOS!

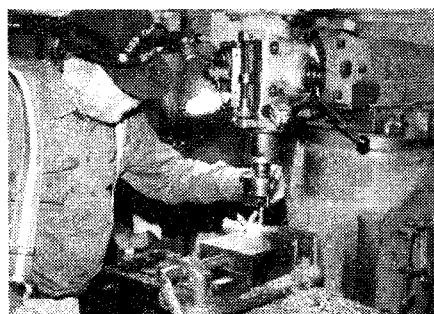
BASIC MILLING

BASIC MILLING MACHINE OPERATION

with Steve Chellis
produced by Bob Bailey

This video opens with a Stirling engine rattling off the revolutions, but quickly shifts into milling machines, their tools and the necessary set ups to get precision results.

Steve will show you his tools including end mills, collets, drills, tap starters, edge finders, wig-



glers (center finders), a boring head, a home made fly cutter, a Jacobs chuck, carbide insert miller cutters, taps and lots more.

Then he'll take you over to his vertical mill and show you all the controls from vertical quill feeds

to table controls. He'll briefly mention what to avoid if you intend to buy a used milling machine.

First off, you'll square up a one inch thick aluminum plate. Steve will show you how to clamp it to the milling machine table and use a dial indicator to true it up. You'll see how useful homemade stop blocks can be in setting up the work. You'll drill a hole, and then bore it out without removing the plate from the table.

You'll see how to use a rotary table, how to set the head an angle and then true it up again, how to use a sine plate to measure angles, set up work on a sine plate, and more. You'll learn how to use a vice on the table, square it up with the dial indicator, use a variety of homemade jigs and fixtures to mount the work.

And finally, Steve will show you how an indexing head and a rotary cutter are used to cut gears.

Admittedly, a great deal of material is covered in a single hour. But this tape when used with a good machine shop book or two (and I'd be tickled to sell 'em to ya), will drive home lessons that could be tough to understand when seen in print.

An interesting tape. Great basic material. Something worth considering. Videos aren't cheap, but consider how many expensive castings you could ruin before you learned some of the basic lesson taught here. A video isn't so expensive when you think of it that way. Think about ordering one. VHS video about 1 hour

No. 1351

\$32.95

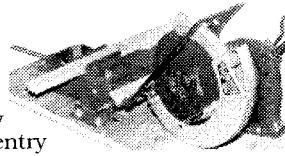
Abrasive Cut-off Saw!

HOW TO BUILD AN ABRASIVE CUT-OFF SAW ATTACHMENT

by Kenneth Dixon

Using little more than angle iron, a sheet of plywood, and an abrasive cutoff disc, you can turn the portable circular saw you usually use on carpentry jobs into a powerful metal cutting saw. Dixon will show you how to build the hinge device that bolts to the saw's frame, and the vise clamp that holds the work securely for cutting. Although the plans show dimensions for his own saw, Dixon shows you how to tailor the plans to fit yours.

Save your arm! If you already have a saw and some angle iron, you can build a power-



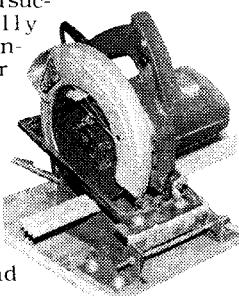
ful new tool for just a few dollars. Like any power saw, an abrasive cutoff saw can be dangerous. But you'll be shown how to use the machine safely. The author's model has

been used successfully without incident for quite some time now.

Build one! It's so easy,

you're almost foolish not to! Low cost, detailed plans with drawings, dimensions, how-to and photos.

Get a copy. 5 1/2 x 8 1/2 booklet 14 pages. No. 890 \$4.00



Disston Manual

DISSTON SAW TOOL AND FILE MANUAL

by Henry Disston & Sons

reprinted by Lindsay Publications

When Disston published this book in the mid 1930's, the company was almost already a hundred years old. During that time they made everything from a cabinetmaker's backsaw to a 110° circular saw for the lumber industry. And this little booklet was, no doubt, distributed at no cost to promote their products.

You get a combination tool catalog and hints & tips manual that is very heavily illustrated and provides practical, useful information. It is thoroughly enjoyable reading.

You get info on the history of the company from Henry Disston and his carpenter's saw to monster inserted tooth milling saws of 1918. You'll learn how to choose and use hand saws, how to use a cross cut saw, a rip saw, how to choose and use backsaws, hacksaws, how to choose the right hacksaw blade, and how to choose and use circular saws (table saws — or bench saws for our British readers). Learn how to choose and use narrow bandsaws, try squares and bevels, gauges, levels, cabinet scrapers, files, and more. Learn

Build a 26" Scroll Saw!

BUILD A 26" SCROLL SAW

by Sun Thrift

"A scroll saw in the 26-inch size can be an expensive item to purchase but you can build a rugged and very useful machine by following this plan, at a fraction of the cost. All materials may be obtained locally and all connections are made with bolts or screws, eliminating the need for any special castings or welding."

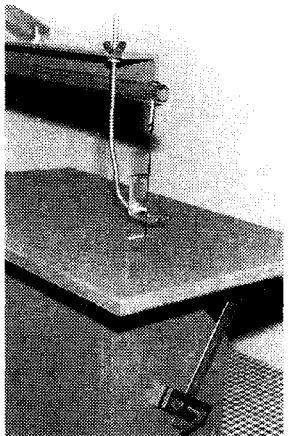
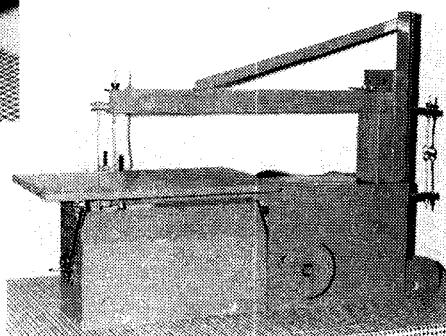


table tilt. 12" by 20 1/2" table. 860 strokes per minute with recommended sheave diameter ratio. Stroke adjustable from 3/8" to 3/4". 2" maximum depth of cut. Uses 1/4 hp motor 1725 rpm CCW rotation. Driveshaft bearings are self-aligning 1/2" diameter-bronze sleeve or ball.

You get text, parts list, photographs, and a full set of excellent plans along with recommendations and precautions for use of the completed saw. Excellent plans. Reasonable price. 8 1/2 x 11 stapled sheets 19 pages.

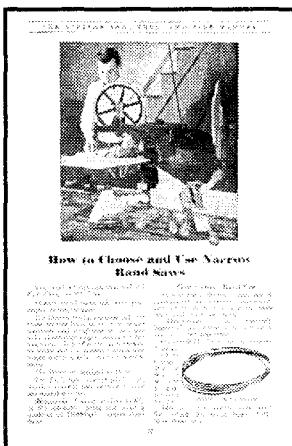
No. 1259 \$10.95



allowing you to make extra long cuts. Although the throat is not adjustable because of the twisted blade, the saw can cut heavy material beautifully. The table does not tilt. Dozens of detailed drawings show you all the tricks of building every part of the saw from motor drive mechanism to wheel tilt and tensioning equipment.

Get a copy of this. Great how-to! It will make a valuable addition to your shop. Great plans to build from or adapt. 5 1/2 x 8 1/2 booklet - jam packed - 22 pages

No. 891 \$4.50



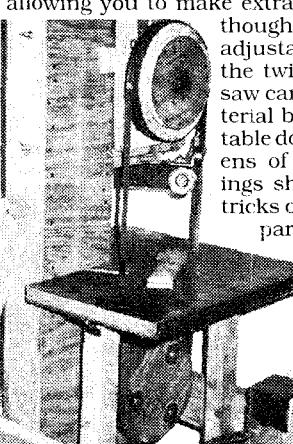
How to Choose and Use Narrow Bandsaws

This section of the Disston Manual gives you all the information you need to know about narrow bandsaws. It includes how to choose the right saw for your needs, how to use it, and how to care for it. It also includes information on how to use narrow bandsaws for various types of work, such as cutting wood, metal, and plastic.

how to sharpen a saw, and how to take care of all these tools.

And of course, you'll be exposed to a full line of Disston products from hand trowels and hedge shears to a Triumph saw set

and a pattern maker's saw. Most of the products are understandably geared toward woodworkers, but tools are tools. And if you don't like tools, then why are you reading this catalog? Great reading and a great price. Get a copy. 5 1/2 x 8 1/2 booklet 48 pages No. 21982 \$5.95



valuable addition to your shop. Great plans to build from or adapt. 5 1/2 x 8 1/2 booklet - jam packed - 22 pages

No. 891 \$4.50

PRACTICAL METAL PLATE WORK
by Paul N.
Hasluck
reprinted by Lindsay Publications

Oh, I know what you're thinking. "Metal Plate" — quarter inch and thicker. Wrong! Very wrong! This dude was British. What he was talking about was sheet metal, and how to turn it into something a bit more exciting and, to my way of thinking, more useful than furnace duct work.

Hasluck's Metal Plate Work

Chapters include the materials used; geometrical construction of plane figures; geometrical construction and development of solid figures; tool and appliances used; soldering and brazing; tinning, re-tinning, and galvanizing; examples of practical metal plate work; and examples of practical pattern drawing.

Remember this is same man who gave us the incredible book *Metal Working - Tools, Materials, and Processes for the Handyman* described elsewhere in this catalog. That book provides an excellent chapter on sheet metal, but this provides

much more information, much more detail.

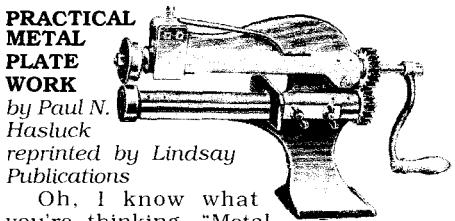
You'll see all the stakes, hammers, punches, groovers, and shears you could want. You'll also see a burring machine (or Jenny), bench standards, tube bend rollers (slip roll), a folding machine (brake), a bottom-closing machine, a paning down machine and much more.

You'll be shown how to make trays and bread pans. If you can do that successfully, you're on your way to building tools boxes of your own design. More difficult is the fabrication of a sauce pan, a ship's ventilator (air scoop), an oval bottom tea kettle and more. Once you have completed these lessons, you should be able to fabricate almost anything.

To get from flat sheet metal to a water tight three dimensional container requires a good pattern. You'll be shown all the necessary geometry to lay out the pattern without heavy theory.

This is practical how-to that was part of Hasluck's "Technical Instruction Series" of books. It's all straight-to-the-point and practical. If you work sheet metal, or plan to, this is something to have. Get a copy!

5 1/2 x 8 1/2 softcover 160 pages
No. 21591 \$9.95



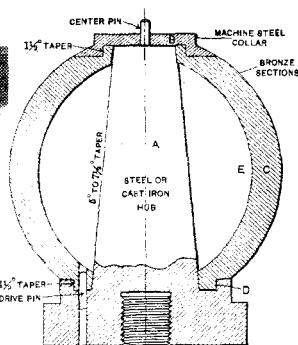
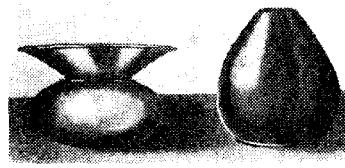
Mach Reference Series's Metal Spinning

Machinery Reference Series No. 57
METAL SPINNING
reprinted by
Lindsay Publications

Here's a great little 1910 booklet from the publishers of Machinery magazine that will introduce you to metal spinning. You'll be shown the tools, chucks, and forms, you'll need and how to use them to create a nose cone for that rocket you're building to send your mother-in-law to the moon. Well... The truth is you'll see a zinc lamp shade spun in one operation, a German silver reflector for a light, copper and aluminum forms that look like spittoons, and more.

This is a great introduction into converting sheet metal into beautiful and useful three dimensional forms. This is a skill to have. Order a copy. The price is right. 5 1/2 x 8 1/2 booklet 38 pages

No. 21370



\$4.95

Fig. 31. Elevation and Plan showing Construction of Sectional Chuck

METAL SPINNING FOR CRAFTSMEN, INSTRUCTORS, & STUDENTS

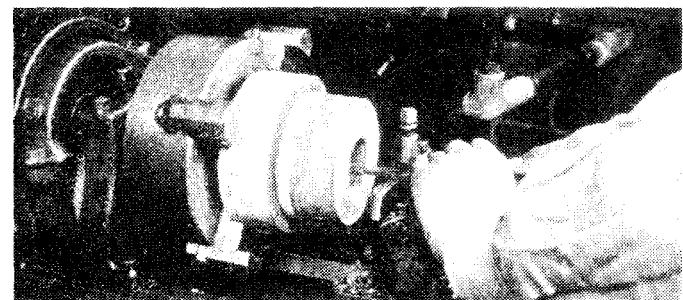
by Reagan & Smith

You can chuck a solid block of metal into a lathe and cut enough of it away to get the shape you need. You can also chuck a piece of sheet metal in the same lathe and using slightly different tools spin it into a smoothly contoured shape that can become anything from a teapot to a missile nose cone.

In this quality book you'll learn historical facts about metal spinning, why people are interested in spinning, the necessary mechanical set-ups, spinning tools, chucks for spinning, the treatment of different metals, lubricants to be used, the actual process of spinning, and educational as well as useful projects.

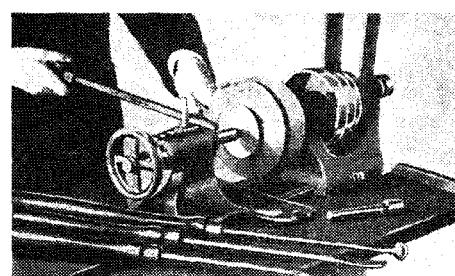
There are plenty of shop courses around that will teach you how to turn a bronze bushing. But have you seen any instruction offered on turning a sheet of copper into a beautiful vase or candlestick?

Reagan & Smith's Metal Spinning



You'll enjoy this 1936 technical school textbook. It's simply written, loaded with valuable illustrations, and gets right to task of teaching you spinning. Master this skill. It's not all that hard, but very few people, including expert metal workers, know how to spin. You can learn how with this book and some elbow grease. Excellent book on a rarely taught skill. Order a copy!
5 1/2 x 8 1/2 softcover 80 pages
No. 4830

\$9.95



Crashaw's Metal Spinning

METAL SPINNING
by Fred Crashaw
reprinted by Lindsay Publications

Mount a piece of sheet metal in your lathe and spin it into a beautiful dish, vase, candlestick, pitcher, or nose cone for a Patriot missile. You can do it!

The subtitle reads: "Practical instruction in a fascinating art."

This small book, one of the Popular Mechanics Handbooks, appeared in 1909. Chapters include the lathe and its parts, tools, the preparation of metal for spinning, how to spin a hollow dish, how to spin a deep dish, how to spin a vase, and how to spin some unclassified forms.

You'll find a good many illustrations, most of them being simple drawings of the tools and chucks you'll need. You get details on preparing brass, zinc, aluminum, copper, and white metal for spinning.

It's a small book with right-to-the-point instructions that will allow you to create decorative and functional housings for your projects, large hollow terminals for Tesla coils and Van de Graaff generators, and many other objects like a bullet-shaped headlight shell for your 1938 Desoto!

Great little book at a great little price! Get one. 4 1/2 x 7 softcover 72 pages
No. 20714

\$5.95

Sheet Metal Tools!

Niagara Machine
and Tool Works

NIAGARA MACHINE AND TOOL WORKS

Catalog No. 50

reprinted by Lindsay Publications

A gentleman in St Louis loaned me this small turn-of-the-century catalog of "tools and machines for sheet metals: tinsmiths' and roofers' tools, presses and punches, squaring and rotary shears, etc."

Although it is no more than a tool catalog with wall-to-wall illustrations, it is tremendous picture resource for those of us who want to build, borrow, steal?, or restore early sheet metal tools either to use or as collectibles.

Here, you'll see a bar folder, taper edger, square pan folder, open throat folder, power double lock folder, pan former, burrs and wirers for edgers, elbow edging machine, power setting down machine, cornice maker crimpers, heavy crimpers and benders, encased rim machine, bottom flanging machine, turret double seamer, back geared slip roll, corrugating rolls, curved shear, oval handle former, snips, hammers, funnel tongs, lock seaming machine, corner notcher, foot squaring shear, lever punch, punch presses and much, much more. And you get specifications for each machine.

We've enlarged the original book to fill the new page size and bring out the details. These are machines that are not found in most tool catalogs. Geez! I wish I had a few of these beauties. Could I save money! I could slip out at night cut the fender off my neighbor's car and turn it into a coffin for my mother-in-law. I could spend the life insurance money on a new lathe!

Such a deal!

Grab a copy of this. The price is right. Every page has a wood cut or photograph of a fascinating machine. Interesting reading. Order a copy! 5 1/2 x 8 1/2 paperback 132 pages No. 21915 \$9.95



Niagara Slip Roll Forming Machine
with Lifting Device for Upper Roll



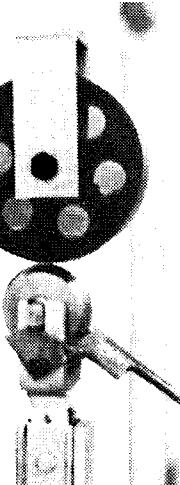
3 x 36 in. Single Back Geared,
for Hand and Bench

THE ENGLISH WHEEL BOOK

by David L. Anderson

In his introduction the author explains his book better than I can:

"The English Wheel, sometimes called the wheeling machine, is a simple non-powered machine for forming a large radius bends in sheetmetal. It can form simple bends or compound shapes, i.e. domed or crowned panels. It was apparently developed in England at about the turn of the century..."



English Wheel!

In my own activities as a hobbyist, I have done quite a bit of [auto] body repair and restoration. I have had my English Wheel built for most of a year now and have found it to be simple to use, effective in forming low crown panels, and much reduces the time needed to make usable patch panels. I would not begin to say that I am an expert, or that I could now construct a complete [auto] body from scratch, but I can certainly say that the machine is worth the time and effort I put into making it.

I have attempted not only to provide complete plans for four different size English Wheels, but also to provide information on how to tailor the design to permit substitutions of materials and/or to confidently build a different size machine. The design calculations are also provided to allow the reader to assure himself that the designs given will work prior to committing the time and money involved in building an English Wheel.

I have assumed that anyone far enough along in the hobby to consider having an English Wheel would already have a basic set of skills and equipment. The minimum that I have in mind are some means of cutting stock steel (cutting torch/grinder or powered metal cutting saw), arc welding equipment, and drilling/tapping capability. Optionally, a milling machine for preparing the lower wheel slide (an optional non-machined method is also given) and a lathe for preparing the wheels would be nice. Otherwise wheels can be purchased complete for the machining jobbed out to a machine shop..."

You get drawings, photos, formulas and several large sheets of plans that will allow you to build this unusual sheet metal machine. This is quite unusual! A rare machine, and rare plans. Worth having. 8 1/2 x 11 softcover 40 pages with 4 plan sheets No. 1336 \$19.00

AIRCRAFT Sheet Metal!

HOW TO DO

AIRCRAFT SHEETMETAL WORK

by Norcross & Quinn

reprinted by Lindsay Publications

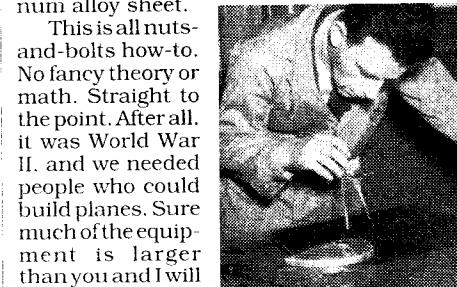
Making a radio chassis from sheet metal is very easy if you have a brake. How tough can flat surfaces bent at right angles be? But have you ever seen a DC-3 up close? Or any other airplane for that matter? Look at all the smooth shapes and perfect transitions. How did they do that? Airplanes, like custom autos, are exquisite examples of sheet metal craftsmanship. This book will show you how it was done in 1942.

Chapters include blueprint reading; shop math; properties and standards of aircraft materials; how to measure; templates; aircraft sheetmetal layout; how to cut sheet; files and how to use them; forming, stamping, and hydraulic presses; drilling and how to do it; how to rivet; jig assembly in modern aircraft factories; skin fitting; spot welding; and shop projects.

Obviously, I don't expect you to build a DC-3. But here you learn to work sheet metal in the most basic terms. You'll see a man removing wrinkles from a curved sheet using a planishing hammer and bumping stake. And a man bending an extrusion to an irregular shape using a rawhide hammer over a V block. Or a man showing you how to use a bucking bar while riveting. Or a man using a vixen file to rapidly trim an aluminum alloy sheet.

This is all nuts-and-bolts how-to. No fancy theory or math. Straight to the point. After all, it was World War II, and we needed people who could build planes. Sure much of the equipment is larger than you and I will ever use, but the principles and the skills taught are the same. This is one of the best sheet metal books I've ever seen.

Great book that teaches skills. It's just what you need to help you in the restoration of your Bugatti. Might even help you make a radio chassis or tool box. Excellent book. Get a copy. 5 1/2 x 8 1/2 paperback 285 pages No. 21893 \$14.95



Tiny Drills Make Your Own!

HOW TO MAKE TINY DRILLS QUICKLY, EASILY & ACCURATELY

by Robert Porter

The author sent me a copy of his booklet and a letter explaining "...After making this type of drill by hand the hard way for over 40 years (I'm a little slow) to repair and restore antique clocks and watches, I've developed a simple method to make tiny (down to 0.004" diameter so far) drills quickly, easily and accurately.

I am a technical writer for the Horological Times, the official trade publication of the American Watchmakers/Clockmakers Institute..."

You get a brief, nicely illustrated booklet that will show you how to make tiny spade drills from high speed steel and tungsten carbide. Here's the straight dope from someone who knows what he's talking about. I'd say anyone who makes models must have a copy. And the rest of us had better get one just in case. Good stuff... 5 1/2 x 8 1/2 booklet 16 pages

No. 1409 \$3.95

Handbook for Drillers

HANDBOOK FOR DRILLERS

by the Cleveland Twist Drill Co.
reprinted by Lindsay Publications

Learn about the parts of a twist drill, tips on grinding or sharpening, correct feeds and speeds, tips on drilling hard materials, brass, use of cutting compound, and more. Chapter 5 covers common errors and their results, including broken tangs, how to "drift out", using a lead hammer, warming high speed drills before using, and more. You'll find tables of feeds and speeds for drills from the tiniest numbered drill to 3" dia. drills with Morse taper shanks. Finally you'll discover several pages of advertising promoting Cleveland Twist drills, reamers, counterbores, end mills and more.

This eleventh edition from 1925 was intended to teach machinists the underlying theory of twist drills. You'll find it just as useful as they did! Order a copy of this inexpensive gem. You'll like it. 4 1/2 x 8 1/2 booklet 48 pages heavily illustrated
No. 20056 \$3.95

Dies Their Construction & Use

DIES - THEIR CONSTRUCTION AND USE
by Joseph V. Woodworth
reprinted by Lindsay Publications

Dies are magic! Mount them on a power press, slip in a piece of sheet metal, and let the press cycle. Out come simple flat shapes or complex forms like soft drink cans and auto fenders. And it is all done at incredible speed, time after time, each and every piece being identical.

Learn how you can put dies to work in small manufacturing shops. Thirteen chapters will teach you about blanking dies, piercing dies, simple dies for use in the machine shop, gang and follow dies, use of dies for production of sheet metal parts, bending and forming dies and fixtures, perforating dies, dies for curling, wiring and seaming, draw dies, coining processes, methods for feeding stock, hardening and tempering of dies, and more.

You get page after page of drawings and photos showing all kinds of dies for applications from turning a square of sheet metal into a tube in one hit, and punching holes, to the fabrication of those fancy old tins that held tea, tobacco, and crackers decades ago. You'll see a variety of presses - most of them in the smaller sizes.

The beauty of this 1917 volume is that you'll be taught how to make simple dies in smaller sizes for producing all kinds of things from safety pins to punching fancy leather pieces for shoes. You'll even see a compressed air drop hammer used for making sheet metal caskets!

You can learn right here how to make simple, low-cost dies in your own shop that produce items you can use yourself or sell as a sideline. Great information on a mass production tool useful to the small time operator. Very well illustrated. You'll like it. Get a copy. 5 1/2 x 8 1/2 softcover, 400 pages.

No. 4309 \$15.95
No. 21621 \$19.95



Dies are magic! Mount them on a power press, slip in a piece of sheet metal, and let the press cycle. Out come simple flat shapes or complex forms like soft drink cans and auto fenders. And it is all done at incredible speed, time after time, each and every piece being identical.

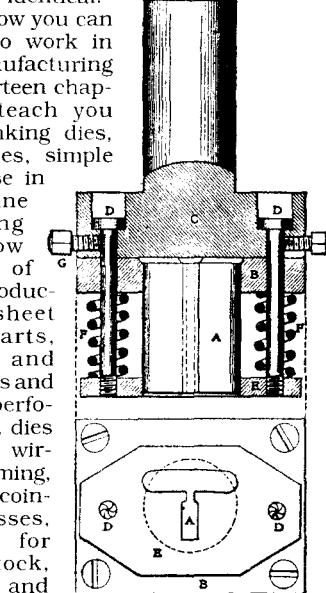
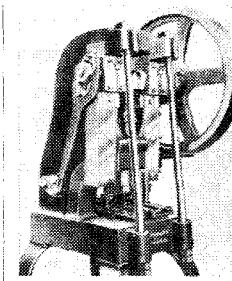


FIG. 142.—THE PUNCH.



PRESSWORKING OF METALS
by C. W. Hinman
reprinted by Lindsay Publications

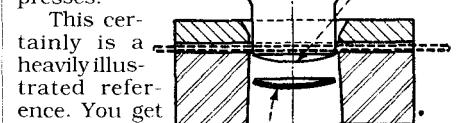
Industry found long ago that they could make more parts, faster using less metal if they stamped and formed parts out of sheet

Pressworking of Metals!

Mass Production Techniques!

metal, whether they be the soda cans or the fenders on your car. It's all done with the equipment described in this book.

Chapters include: introduction; types of presses and their selection; stamping and forming mild steels; stamping and forming nonferrous metals; specifications for ordering sheet materials; pressworking nonmetallic materials; press accessories and attachments; chutes, magazines, hoppers, roll reeds and dials; preliminary steps in die engineering; automatic stops; blanking and cutting dies; two-step die operation; progressive dies; developing the blank and scrap strip; shaving, burnishing, broaching, and trimming; section dies and inserts; bending, forming, embossing, and folding; assembling dies; coining, swaging, cold sizing, and extruding; drawing dies; low-cost tools for limited production; special dies and novel operations; and mathematics for press tools and presses.



This certainly is a heavily illustrated reference. You get brief, to-the-point how-to hints and tips, and details on using a press to work metal. Think about it. A simple die and a simple press could punch out the chassis for a radio or an unusual heat engine, quickly fabricate brackets in large quantities, or maybe even punch out embossed novelties

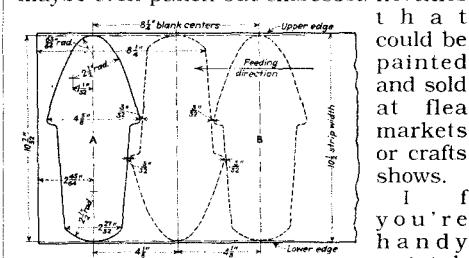
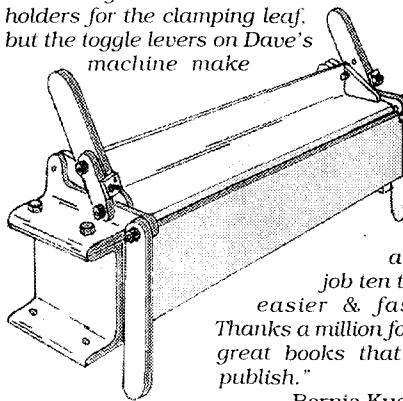


FIG. 143.—The highest material economy is determined by positioning three card-board outlines of the blank A in a symmetrical rotation, and by comparing the unit areas of these repeated sections with the total area of the blank A, found by rearranging the blocks in several other positions. The unit area is found by multiplying the distance between blank centers by the proposed width of the strip.

that could be painted and sold at flea markets or crafts shows. If you're handy with metal and want to be handier (and best of all, make money doing it), this is a book to look into. I think it makes a natural companion to Woodworth's "Dies: Their Construction and Use..." Beautifully illustrated. Interesting photos and incredible number of clear, informative mechanical drawings. From 1941. Excellent. Get a copy! 5 1/2 x 8 1/2 softcover 443 pages
No. 21621 \$19.95

"I built a sheet metal brake using Dave Gingery's book and am extremely happy with the results. I scaled it up to twice the size and added truss bars and a modification to the bending leaf that allows me to form right-angle ribs. I have about \$100 in it and it is far superior to the \$300 'home shop' units I have seen. They have screw-down holders for the clamping leaf, but the toggle levers on Dave's machine make



*a n y
job ten times
easier & faster!
Thanks a million for the
great books that you
publish."*

-Bernie Kuschel

Build Gingery's Sheet Metal Brake

SHEET METAL BRAKE by Dave Gingery

Build a brake and turn sheet metal into ducts, flashing for your house, boxes for tools and supplies — you name it. Dave told me he has built many brakes over the years some of which are still being used in industry.

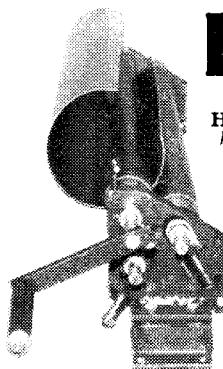
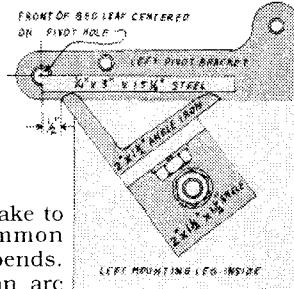
You get far more than plans. Inside this 52 page paperback you'll find drawings, parts lists, how-to, dimensions and everything you need to know about building a brake. You'll find the plans scaled for an 18" wide machine, but you will also learn how people have been scaled it up to much greater widths. Dave will even show you how

to use the brake to make common joints and bends. You'll need an arc welder to lay a few beads.

People have written to say "that's my kind of book." And they're right. Dave takes you by the hand and shows you construction step-by-step, pointing what is and is not important in the design of the brake. You don't often see good plans for a brake, let alone good ones. So order a copy! 52 pages 6 x 9 softcover

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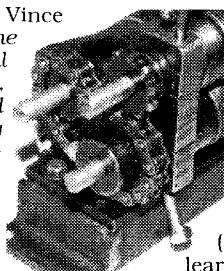


Build a Slip Roll

HOW TO BUILD A SLIP ROLL MACHINE by Vincent R Gingery

Build yourself a simple device comprised of three 1 1/2" steel rolls that will bend flat sheet metal into smooth curves to form cylinders of various diameter. Vince writes in the introduction *"The two front rolls grip the sheet metal and force it against the rear roll, which forces the material up and around the top front roll curving the sheet and forming the cylinder."*

The base is made from 3" x 1 1/2" channel. The rolls are 24" lengths of 1 1/2" common black pipe. A drill press, bandsaw and welder were used to quickly build this beaut. You can probably find ways around using these power tools if you have to. But there are some cuts that must be made in 3/4" plate steel that could eat up several hacksaw blades and could make one of your arms bigger than the other. A power saw sure would be nice here. Welding will make the machine absolutely solid.



Roll flat sheet metal into cylinders....



You get all the usual detailed drawings and all the "hand-holding" how-to you've come to expect from the father-son Gingery team. This is a quality how-to manual showing you how the build a machine that would cost hundreds of dollars commercially.

Vince will even give you a couple of simple lessons in rolling up a straight and tapered (cone-shaped) cylinder. There's not much to learn. The machine does it all.

Great machine. Great manual. If you check out the illustrations here, and I think you'll want a copy for your library, even if only for future reference. Order a copy today!

8 1/2 x 11 stapled spine booklet 40 pages

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Dave Gingery Works Sheet Metal!

Do amazing work with the simplest tools...

WORKING SHEET METAL

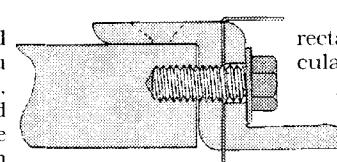
by Dave Gingery

Dave will take a hammer and a tree stump and show you how to make useful objects from sheet metal. This book is a quick lesson in basic sheet metal work as only craftsman Dave can teach it. He'll show you how to build a sturdy workbench and equip it with a simple bar clamp that will allow you to do all kind of fancy things you would have never believed possible.

Then you'll learn all the basics such as cutting sheet metal and sinking using a block made from a tree stump. Learn about joining and edging - the flat lap, pipe lap, corner lap, double corner lap, pocket seams, Pittsburgh seams, the grooved seam and more. He'll show you how to build a simple

hand groover tool and a hand folder. You can do tab seams, double lock seams and more. Make a flange starting tool. Learn how to raise a flange on a disc and a cylinder. Dave will show you wire edging and other edge treatments.

Chapter 4 reveals patterns and layout. This can be confusing until you see it, and then you never forget it. And Dave can show you how its done - simply. This stuff is important if you're going to build tool boxes, trays, flues for a blast furnace, a pitcher with a flared top, and so on. And yes, he'll show you to layout a complex transition piece from



rectangular flue to a circular one.

Finally, you'll learn how to fabricate a replacement for a gas tank. He'll show you how to redesign it so as to make it as simple as possible.

This is not the be-all and end-all of sheet metal books. Dave will tell you that. But if you're as ignorant of sheet metal work as I am, this is the place to start. The price is right, and there is NO doubt that the author knows what he's talking about.

This is another Dave Gingery book. Do I need say more? Get a copy. 5 1/2 x 8 1/2 softcover 90 pages

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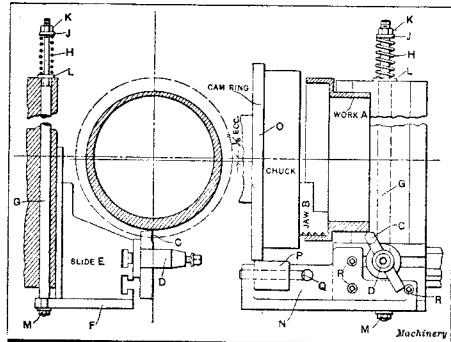


Fig. 2. Eccentric Turning Attachment for Engine Lathe

Tools, Chucks and Fixtures

TOOLS, CHUCKS AND FIXTURES

by Albert A Dowd

reprinted by Lindsay Publications

Discover ingenious ways of clamping and machining. Chapters include adjustable and multi-cutting turning tools, design of boring tools, recessing tools, floating reamer holders, arbors for turning and boring, holding devices for lathe and boring mill work, methods of machining thin and irregular work, taper boring and turning attachments, machining convex and concave surfaces, methods for machining eccentric work, counterbalanced and indexing fixtures, influence of chips on the design of tools and fixtures, and providing for upkeep in the design of cutting tools.

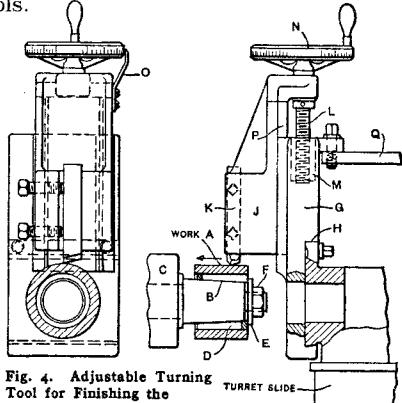


Fig. 4. Adjustable Turning Tool for Finishing the Outside of Short Bushings

You get illustrated discussions on a holder for small reamers, arbors for large work, contracting pin chucks, fixture for holding several sizes of bevel gear blanks, boring bar with adjustable cutter, indexing fixture for cast-iron valve body, and on and on.

Some of this stuff you won't be able to use directly unless you have a turret lathe, are producing large flat belt pulleys, and so on. But even the devices you can't use are of value because they will teach you something when you see how another ingenious machinist from another era solved a difficult problem.

You get chapters of short stories reprinted from *Machinery* magazine prior to 1915. Unusual book. Some directly useful info. Some not. Great ideas! Study it. Experiment. Order a copy today! 5 1/2 x 8 1/2 softcover 304 pages

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Work Pewter!

Useful skills applicable to all types of metal!

PEWTER-WORKING INSTRUCTIONS AND PROJECTS

by Osburn and Wilber

I keep bringing this book back because it is so great. If you work metal and don't have a copy, I think you're a bonehead. That's because it may be about pewter, but it teaches the reader about all types of metalworking

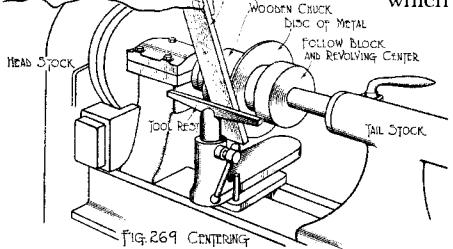
from making sand molds and casting molten metal to spinning metal into beautiful shapes on the lathe. And it's as beautifully illustrated as any book I've seen.

Chapters include the story of pewter, the metal, designing pewter ware, layout and forming, soldering, plaster casting, beating down and planishing, raising, decorative processes, casting spinning low forms, spinning high forms, and more.

These are basic techniques that are useful with other metals. But pewter is available, so why not give it a try? You could cast an small obscene statue

and shock your mother-in-law with it as a Christmas gift. Or you could make

yourself a beautiful pewter dish in which



to keep jellybeans, snuff or Preparation-H. Your choice.

Again, if you don't have a copy, I think you're a bonehead. Geez! It's a lot of book for the money. Get one. You'll like it. 6x9 softcover 160 pp

No. 1205

Lathe and Planer Tools

LATHE AND PLANER TOOLS

Machinery Reference Series 7

reprinted by Lindsay Publications

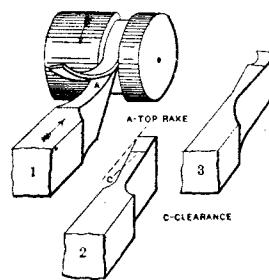
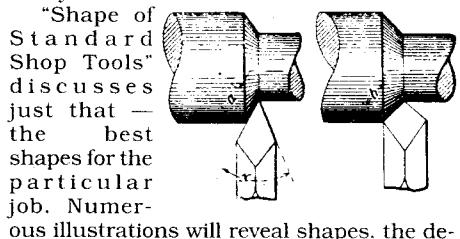


Fig. 16. Action and Form of Cutting-Off Tool.

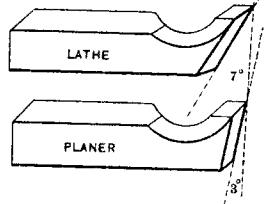
Learn about "Cutting Tools for Planer and Lathe" — the basic information about grinding and setting tools that every machinist should know.

"Boring Tools" will show you some of the methods in use

in 1908 that just might solve a shop problem that you'll encounter soon.



"Shape of Standard Shop Tools" discusses just that — the best shapes for the particular job. Numerous illustrations will reveal shapes, the desired rake, length of shank and how these details affect the tool performance.



Finally, explore an unusual section on "Straight and Circular Forming Tools". Learn how to calculate dimensions and build the tools. Great information — a mixture of basic and unusual info low price. Order a copy. 5 1/2 x 8 1/2 softcover .40 pages.

No. 893

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FAILURE IS DESIRABLE!

A lot of people don't like building things simply because they can't tolerate failure. Really! That's true. But tinkering is just that: failing until you figure out how to make something work. People who look at failure as a reflection of their self-worth are actually going to become failures.

The way I see it is that failure is aggravating, but provides an opportunity to learn. I don't like kits because I can't fail, so I don't learn much. The process of tinkering, simply trying something new, teaches valuable lessons.

Some people want every step spelled out in black and white. They want to be told everything. Creative people get a how-to book and merely use it as a guide to creating their own special version of the project. They don't want to create a replica of someone else's design.

This is a philosophy for success. You probably already know these truths. But some people don't. (Edison and Ford knew.)

Finishes for Aluminum

FINISHES FOR ALUMINUM

by Reynolds Aluminum
reprinted by Lindsay Publications

This is the second of two finishing handbooks that appeared in 1946. The first had lots photographs and general descriptions of finishing techniques. Pretty boring. I flushed it down the toilet. Had to call a plumber to fix the sewer.

But this book is unique. There are no pictures, so if you can't read, you're in trouble. You get details on materials, equipment, solution preparation, procedure and control. These are industrial chemical processes that you won't read about in your newstand magazines.

This is wall-to-wall, detailed how-to for professional chemical aluminum finishing techniques. Some of it you probably can't use since it uses pre-mixed chemicals like "Alumiprep" and "Kelite Anodyne". But even the directions for use of these cleaners will give you valuable insight into cleaning techniques.

What you can use are five different anodizing methods using oxalic acid, sulfuric acid, phosphoric acid, chromic acid, and sulfamic acid. They will tell you about the tanks you need for cleaning, rinsing, anodizing, dyeing and all the rest. They will tell you that you need 15 to 20 volts with 1 volt regulation at 12-15 amps per square foot. And you'll learn about the steps involved.

ELECTROPLATE!

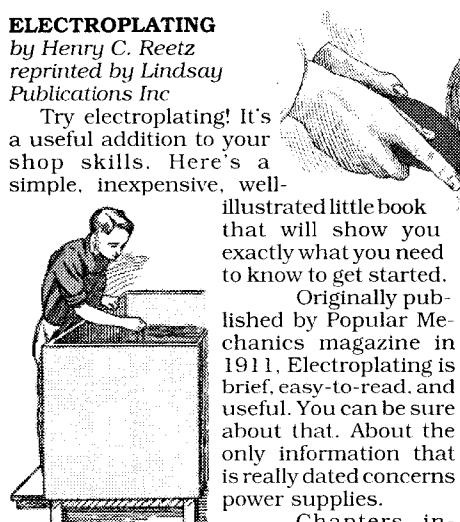
ELECTROPLATING
by Henry C. Reetz
reprinted by Lindsay Publications Inc

Try electroplating! It's a useful addition to your shop skills. Here's a simple, inexpensive, well-

illustrated little book that will show you exactly what you need to know to get started.

Originally published by Popular Mechanics magazine in 1911. Electroplating is brief, easy-to-read, and useful. You can be sure about that. About the only information that is really dated concerns power supplies.

Chapters include introduction, electrical equipment, shop equipment, cleaning goods before plating, copperplating, nickelplating, silverplating, goldplating, miscellaneous, first aid, and business suggestions.



Anodizing! Five different formulas!

ElectroPlating! Copper, nickel, chrome, brass, silver...

(all of it very poisonous)

which dyes to use, precautions, and more. The suppliers addresses are 1946 vintage and unreliable, of course. Is it simple? No. Dangerous? Yes! But that's why so few people know how to do it.

And there's more. You can electroplate brass and bronze, on aluminum as well as steel, iron, copper, etc with the standard cyanide baths described. You can plate silver, copper, chrome (yes, chrome if you can muster 200 amps per square foot), tin, nickel, black nickel, gold, cyanide copper, acid copper, and rochelle salt copper. You even get a page on spray painting with lacquer.

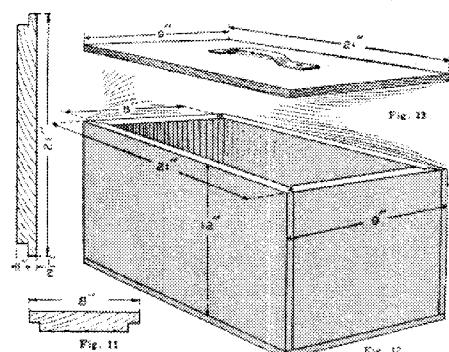
What you get here is fifty year old chemistry. How-to. Dangerous. Technical. But you get what you need to know - the details that no one seems to want to tell you. Rarely does this type of inside information surface, or can be offered at so reasonable a price. If you would like to electroplate and/or anodize aluminum, GET THIS. You need to know what you're up against before you can even make an intelligent decision as to whether its worth pursuing. Excellent book. Rare info. Order a copy. 5 1/2 x 8 1/2 paperback 112 pages

No. 21940

\$9.95

You'll learn how to clean parts, polish them, mix up solutions, make tanks, and all the essentials to get going. This could very well be an easy to way to try plating. If you enjoy it, then you can launch into "heavier" texts loaded with chemistry and industrial secrets.

A great little book. Worth having. Order a copy. 5 1/2 x 8 1/2 softcover back 99 pages No. 20080 \$7.95



PLATERS' GUIDEBOOK 1936

by Chamberlain & Hogaboom
published by METAL INDUSTRY
& ELECTROPLATERS' REVIEW
reprinted by Lindsay Publications

This small industrial handbook tried to help the professional to survive the Great Depression and provide quality to his customers.



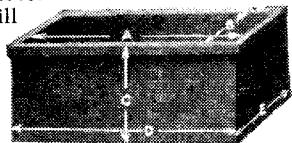
You get are 68 core pages of how-to information surrounded by advertising aimed at the plating trade. Contents include: polishing, buffing and coloring; abrasive rolling and ball burnishing; solvent and vapor degreasing; metal cleaning; solutions for plating; tanks; stripping solutions; metal coloring; saw dust tumbling; speci-

PLATERS' GUIDEBOOK

1936 How-To for
Professional Platers!

fications for plated coatings; electrolytic deposit tables; replenishing the metal content of cyanide baths; methods of analysis of plating solutions; and a list of chemicals and their equivalent names.

You get lists of abrasives commonly used on different metals, how to clean metals electrolytically, with alkali, and how to pickle. You get plating bath formulas for brass, bronze, cadmium, copper, chrome, nickel, gold, silver and more. Some of these formulas were at the time protected by patents. You get formulas for baths that will color metals, for instance, turn brass blue-black. You get instructions on how to anodize aluminum using chromic acid. You get detailed instruction on how-to check the health of your plating baths. And there's much more.



Surrounding the how-to pages are ads for buffing wheels, plating barrels, filters, proprietary plating baths, motor-generators, dipping baskets and more. Don't expect these suppliers to still be in business.

This is a great little book with practical info aimed at the professional. The chemicals used here are potentially dangerous. Electroplating is not something you're going to do in a spare bedroom or out of the trunk of your car. Excellent little book! Practical info! Trade "secrets". Get a copy! 5 1/2 x 8 1/2 softcover 128 pages

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<http://www.keynet.net/~lindsay>

(Tain't nuthin' special... Just roadkill on the information superhighway)

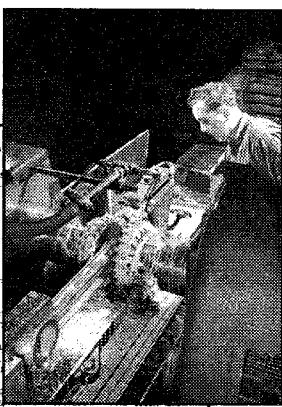
MILLING MACHINE PRACTICE

MILLING MACHINE PRACTICE
by Cincinnati Milling Machine Co
reprinted by Lindsay Publications

No nonsense. Just straight talk about what you need to know to do quality milling. And it was put out by Cincinnati in 1942. They oughta know what they're talking about.

Four chapters include analysis of the process of milling, milling cutters, use of milling cutters, and milling machines. Within these chapters are sections with titles like characteristic form of the milling chip, cutter classification based on relief of teeth, material for milling cutters, feed rate, rake angle, cutting fluid, comparison of up-milling and down-milling, rotary and drum type milling machines, knee and column milling machines and much more.

You get a great low cost booklet loaded with tables, diagrams, photo-



MILLING MACHINE PRACTICE

Table 4 - Dimensions

Cutter Diam., D. In.	Diam. of Hole, A. In.
Nominal Max. Min. Max. Min.	0.576 0.575
2 1/4 2.513 2.485 2.478 2.475	
2 1/4 2.765 2.735 1.000 1.000	
3 8.015 2.985 1.251 1.250	

Included angle 45 or 60 deg. = 50 mm.

End Mills are cutters with teeth on one end. See Figure 9. They are used for roughing, helical, and of moderate angle commonly used are made of five general types: mill or slotting mill, shell end mill, and slotting mill.

Solid End Mills are used for 1/2 of slots, profiling, and face-milling integral with the shank, which may be either straight or tapered.

Tapered End Mills comprise a shank cutter with two cutting teeth on the circumferential surface, and one cut to the center. Flutes are either straight or helical. The cutter can be sunk into the material and then fed longitudinally. A depth of cut equal to one-half the diameter of the mill usually can be taken from the solid stock.

Table 5 - Dimensions of Taper Shank End Mills

See Figure 9

Cutter D. In.	Brown & Root No.	Overall Length	Overall Length	Cutter D. In.	Brown & Root No.	Overall Length	Overall Length
1/2 0.2650 0.2900	5	1 1/2	1 1/2	1/2 0.7650 0.7200	7	1 1/2	1 1/2
3/4 0.5275 0.5125	5	2 1/2	2 1/2	3/4 0.8600 0.7250	7	2 1/2	2 1/2
5/8 0.6250 0.5900	5	2 1/2	2 1/2	5/8 0.9100 0.7250	7	2 1/2	2 1/2
7/8 0.8250 0.7475	5	2 1/2	2 1/2	7/8 1.1490 1.1260	5	2 1/2	2 1/2
1 1/8 1.0250 0.9475	5	2 1/2	2 1/2	1 1/8 1.2920 1.2590	4	2 1/2	2 1/2
1 1/4 1.3125 1.0900	5	2 1/2	2 1/2	1 1/4 1.5010 1.4250	4	2 1/2	2 1/2
1 1/2 1.5775 1.3625	7	2 1/2	2 1/2	1 1/2 1.7650 1.7200	7	2 1/2	2 1/2
2 1/4 2.6400 2.0000	7	3 1/2	3 1/2	2 1/4 3.0000	2	3 1/2	3 1/2

-10-

tos and practical information on the process of milling. Admittedly this was aimed at industry (probably for building 16" guns and Sherman tanks) but has direct application to the smaller scale machining we do and want to do.

Look it over. The quality is there, and the price is certainly right. Get a copy. 6x9 booklet 48 pages No. 21990

\$3.95

Moltrecht's Machine Shop Practice

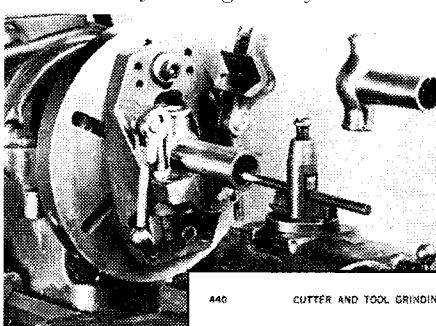
MACHINE SHOP PRACTICE 2ND ED

by Karl Moltrecht

This is the best-selling 1981 two-volume set from Industrial Press...

"Everything the apprentice or on-the-job professional needs to know about the intelligent and efficient operation of machine tools is here. Enhanced by over 760 illustrations and 70 tables. These new editions now offer sections on numerical control: grinding wheels (that includes the newest abrasive materials); single point cutting tools and tool wear; basic drilling machine setups; and formulas for estimating the power required for planing - all significantly expanded and updated. And, greater attention has been given to methods of setting up the workpiece on milling machines, horizontal boring machines, planers, and shapers."

This is easy reading, heavily illustrated machine shop how-to.



440 CUTTER AND TOOL GRINDING

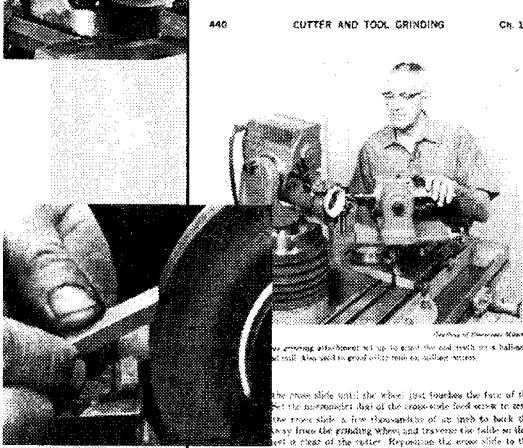
It's jam-packed with info, and is an incredible value. It's not as detailed as "Advanced Machine Work," nor is it low-cost like "How to Run a Lathe," but it's a whole reference library in two volumes. Sure, it covers machine shop just like many other books. But



Ch. 5 DRILLING MACHINE OPERATION

113

Table. A washer and a set are placed on the belt and tightened. In most instances, the T-slot belt may be pivoted through an opening in the workpiece as shown by the right-hand clamping arrangement in Fig. 5-1. In the case of workpiece 1, the set is held in place by the left-hand clamps. Washed surfaces on the workpiece may be protected from damage by placing nuts made from the stopwash and the stopspur.



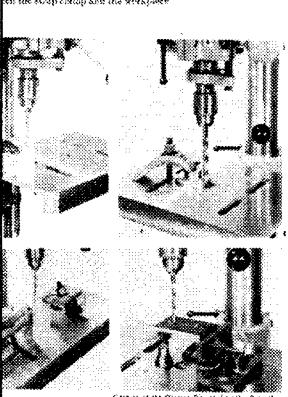
Another of the various fixtures
shown showing a three-jaw self-centering
chucking after having set up to index the tool teeth on a ball-nose
end mill. Also well to provide better results, duller teeth.

The jaws slide until the wheel just engages the face of the workpiece. Set the micrometer dial of the cross-slide feed screw to zero. The jaws slide a few thousandths of an inch back to back so the wheel will not drag away from the grinding wheel and traverse the table or shall not drag across a edge of the cutter. Reposition the cross slide to the original zero position.

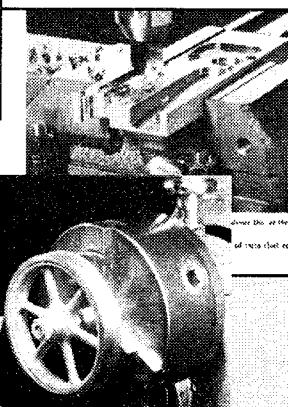
1) Loosen the dog that retains the grinder plate. The effort is not great, and the hand is ready to grip the cutter.

A new cutter that has never been used must have the back face of each tooth ground before it is used. The back face of each tooth is the back face of each tooth as it is positioned in the

and the tooth-nose is adjusted until the back face of each tooth is



CONTENTS OF THE GRINDING TABLE OF FIGURE 5-1
Workpiece clamped to table with a C-clamp. B. Workpiece clamped with double taper clamps. C. Double hole at the right by triple dog clamps stamped with strap wrench. D. Angle plate shown for obtaining a bearing surface perpendicular to table.



it's different and has its own slant to offer. I look at it as a supplement to, not a replacement for, such basic books as Henry Ford's Shop Theory.

Check it out. Definitely worth having. An enormous amount of information for relatively few dollars. 6x9 hardcover vol 1: 570 pp vol 2: 566 pp reg:\$41.90
No. 1450 special: \$39.95

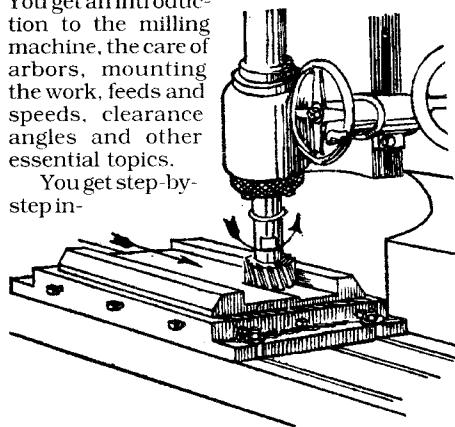
MILLING MACHINE OPERATIONS

by J. W. Barritt

reprinted by Lindsay Publications

Here you get valuable lessons that can make you an expert with a milling machine. You get an introduction to the milling machine, the care of arbors, mounting the work, feeds and speeds, clearance angles and other essential topics.

You get step-by-step in-



structions and drawings that will teach you how to cut off a brass packing piece, cut off a cold rolled steel plate, saw a Bakelite plate, machine a brass spacer, a cast-iron bearing key, and several cast iron brackets.

Milling Machine Operations!

Make your milling machine sit up and sing, instead of chatter...

Then you will be introduced to the indexing head and its use. You'll learn how to cut a tang on a tool-steel spotfacing bar, mill a machine steel latch pin, mill a machine steel stud and a variety of shafts, machine a cast-iron gear, a steel quadrant, a steel clutch with four flat teeth, a cast-iron bevel gear, a brass shoe, a cast-iron soleplate, a forged steel packing piece, a machine steel pull pin, a steel gear, a steel worm, and more.

Most of the lessons show set ups for the horizontal milling machine which is the traditional miller that Dave Gingery shows you how to build in his books. Towards the rear of the book are several lessons for the vertical milling machine. Regardless of the type of machine you have, the lessons are applicable. You'll learn how to approach the work so as to ensure accuracy and avoid costly mistakes.

Make your milling machine sit up and sing rather than make it chatter! Quality lessons! Loaded with illustrations. Order a copy today. 8 1/2 x 11 softcover 110 pages No. 21141 \$9.95

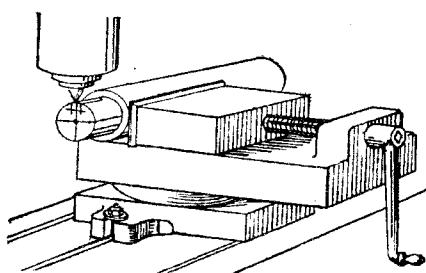


Fig. 2. This is one way of centering the work with the spindle. It is necessary that the keyway be cut on the center of the shaft.

Cincinnati's Treatise on Milling and Milling Machines

TREATISE ON

MILLING AND MILLING MACHINES

by Cincinnati Milling Machine Co

reprinted by Lindsay Publications

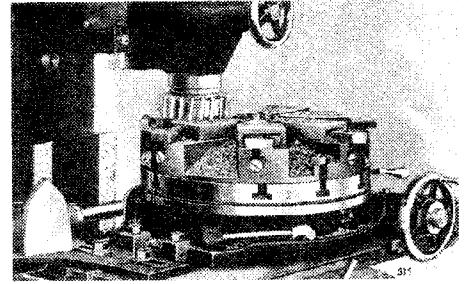
In 1919 Cincinnati published this book to teach machinists about the significant changes and uses of milling machines that had resulted from World War One. Despite its age, this book can teach you a lot, too.

You'll find page after page of great photographs, drawings, and easy-to-read text that explains everything from the construction of milling machines and their installation, to the use of jigs, milling cutters, and indexing heads. You get loads of tables, simple and yet detailed explanations on how to make necessary calculations (should be easy with today's pocket calculators), and even tips on unusual milling jobs. And there is much more.

Although most of the examples are for horizontal milling machines, the vertical model is also shown and discussed. Most operations are common to both machines. You'll find that the lessons taught here are valuable regardless of the type of machine you have.

This is a gem of a book containing a wealth of information for any machinist — and that includes you. Put a copy in your machine shop reference library. It's excellent! 5 1/2 x 8 1/2 softcover 409 pages No. 20358

\$13.95



CONTENTS

Construction and Use of Milling Machines

- Erection, Care and Adjustment of Milling Machines
- Toolroom Millers — The Dividing Head, etc
- Setting up the Machine
- Analysis of the Process of Milling • Milling Machine Feeds • Speeds of Milling Cutters
- Stream Lubrication — Cutter and Work-Cooling System • Milling Cutters — Notes on the Design & Efficiency of Modern Cutters • Cutter Sharpening • Power Required to do Milling • Various Methods of Milling
- Milling Jigs and Fixtures • Sizing and Cutting of Spur Gears • Shop Trigonometry — Bevel Gears and their Calculation — Instructions for Cutting Spiral Gear Cutting — Calculations, Formulas, Tables, etc
- Worm Gearing — Calculations and Methods of Cutting • Continued Fractions and their Application to Shop Problems — Angular Indexing • Change Gears for Cutting Spirals • Cams — Tables for Setting the Milling Machine for Milling Spiral Cams • Tables of Natural Trigonometric Functions

Running a Milling Machine!

RUNNING A MILLING MACHINE

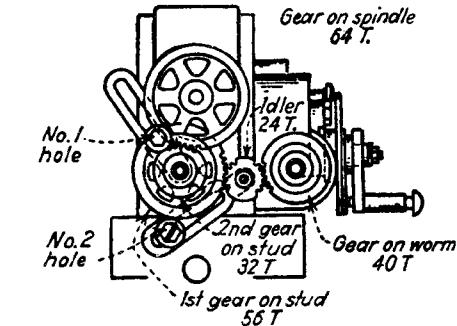
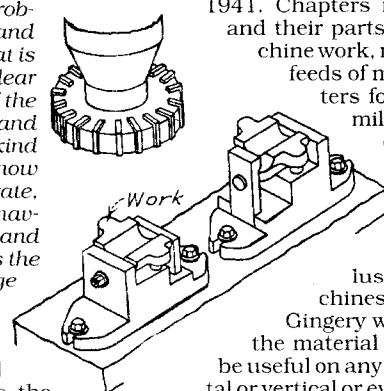
by Fred H. Colvin

reprinted by Lindsay Publications

Colvin, "Mr. Machine Shop", writes in the preface:

"Although this book is by no means a complete treatise on all the problems of milling machines and the large variety of work that is done on them, it makes clear the general construction of the different types of machine and gives a general idea of the kind of work they do. It shows how the different machines operate, points out the necessity of having the work firmly clamped and the cutters sharp, and gives the foundation of the knowledge necessary to become a first-class milling-machine operator."

Beginning with the hand milling machine, which is the simplest machine of this type to learn how to operate, the book shows the other and more largely used kinds, gives the names of the principal parts, and shows a variety of the work that is done on them..."



This is a great companion to "Running an Engine Lathe" that was first published in 1941. Chapters include milling machines and their parts, examples of milling machine work, milling cutters, speeds and feeds of milling cutters, setting cutters for different kinds of work, milling vises and fixtures, the dividing head, a wide-range dividing head, and cutting helices sometimes called spirals.

Although most of the milling machines illustrated are horizontal machines just like the machine Dave Gingery will show you how to build, the material here is general enough to be useful on any milling machine - horizontal or vertical or even on milling attachments for lathes.

Well illustrated. Useful info. Worth having. Get a copy! 5 1/2 x 8 1/2 softcover 157 pages No. 20986

\$7.50

Laying out for Boilermakers!

**LAYING OUT FOR BOILER MAKERS
AND SHEET METAL WORKERS**

by Aldrich Publishing Company
reprinted by Lindsay Publications

In a sense this is a 1918 book about taking a flat sheet of metal, drawing all kinds of fancy triangles on it, putting it in a brake and turning it into a three dimensional object. What's unusual here is that the sheet metal is plate steel and the objects you end up with are steam boilers!

This is an incredible book. If you like to work sheet metal, this will show you the geometry you need to layout and fabricate some of the most unusual tapered, gooseneck adapters and unusual curved forms you'll ever see.

This is an incredible

layout book that goes well beyond the usual simple sheet exercises. After all, we're building boilers here, and they have to be strong and safe.

Chapters include the subject of laying out, triangulation, how to lay out a tubular boiler, how to lay out a locomotive boiler, how to lay out a Scotch boiler, repairing locomotive and other types of boilers, the layout and construction of steel stacks, and miscellaneous problems.

This is wall-to-wall drawings. If you found Meyer's "Locomotive Construction" interesting, I can assure you that this is almost identical. The headings under each chapter are unlike anything else I can recall seeing: holding quantities of flues, smokebox liner, firebox crown sheet, circumferential seams, backing out rivets and repairing cracked mudring, nest coil semi-flash boilers, a flue and return tubular boiler with drop leg furnaces, a lobster back boiler, layout of an arched smoke box, development of ogee corner, and on and on.

The last chapter on "miscellaneous problems" makes up more than half the book! There are boilers that look like brew kettles. You'll see a complex intake elbow for an 18,000 hp water turbine! One pattern will you how to make a pouring lip for a foundry ladle. You get details, hints, tips & formulas for fabricating locomotive boilers and more...

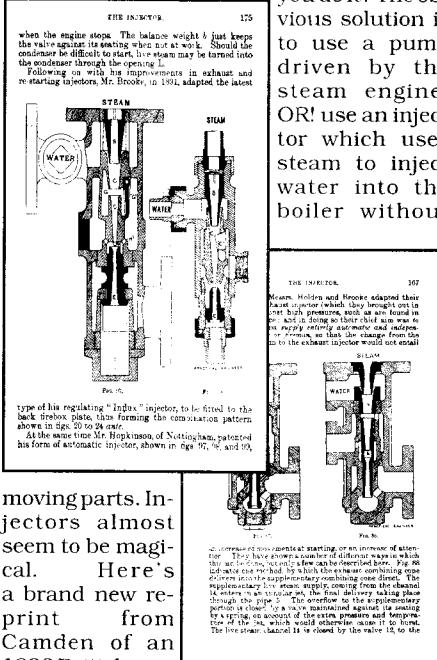
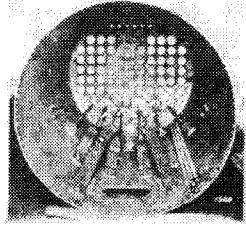
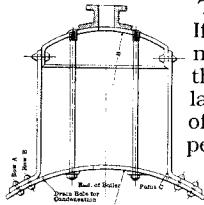
This is a "must-have" for sheet metal workers, steam engine builders, and steam power and technology historians. It's all nuts-and-bolts, practical how-to, 100% illustrated. I've never seen a better one than this. (If you miss out on this, I'm going to have to ask you to have your cranium hydrotested!) You won't be disappointed. Get one! 8 1/2 x 11 cloth 416 pages No. 21630 \$39.95

Injector Secrets!

INJECTORS: THEIR THEORY, CONSTRUCTION AND WORKING

by W W F Pullen

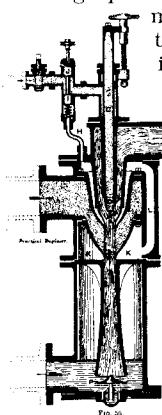
Steam power fans know that as you take steam out of the boiler to power the engine, you have to replace it with water. If you let the water drop too far, you risk a boiler explosion. But if the steam in the boiler is at 200 psi, then you have to force water into the boiler at more than 200 psi. How do you do it? The obvious solution is to use a pump driven by the steam engine. OR! use an injector which uses steam to inject water into the boiler without



moving parts. Injectors almost seem to be magical. Here's a brand new reprint from Camden of an 1893 British gem on injectors. You get detailed text, loads of drawings, plans, charts, and probably more math than you'd like. But there is more in this book on injectors than I can ever remember seeing elsewhere.

The chapters don't have titles, but a quick thumb-through will get you interesting details on lifting, automatic, and restarting injectors, flap nozzles, compound injectors, ejector condensers, water injectors, air injectors, and more.

Expensive little book from England, but top rate. Steam power fanatics should seriously consider adding this to their reference library. Powerful stuff! Get one. 5x7 softcover 188 pages No. 1446 \$17.95

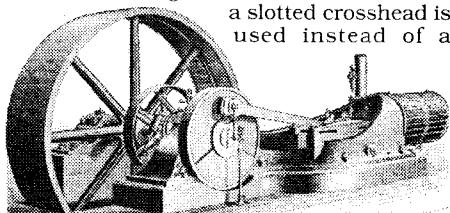


MODERN Steam Engines

MODERN STEAM ENGINES

by Joshua Rose, ME
reprinted by Lindsay Publications

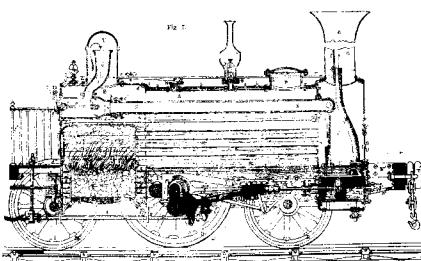
This large format book contains twelve untitled chapters that include such topics as cylinder ports, cushioning and its effect, the effect of rock-shaft upon the action of a common slide-valve, crankpin and piston movements, diagram of valve motion, when a slotted crosshead is used instead of a



crank, Stephenson's link motion, the link in mid-gear: action of the parts, increase of lead due to moving the link from full gear towards mid-gear when a rockshaft is employed, the adjustable cutoff engine, Porter-Allen engine, uniformity of flywheel velocity, action of the auxiliary springs in the Buckeye Governor, construction of the Dexter governor, the Reynolds Corliss Engine, the dashpot of the Wheelock engine, Farcot's compound engine, the condensing engine, the Bulkley independent condenser, the vertical compound condensing engine, the marine engine, principles of construction of the Joy valve gear, the Frick traction engine, the rotary engine, the Ingersoll rock drill, the Worthington steam pump and much, much more.

Remember! Rose was a stellar engineer of his day, and this book was intended to teach the mysterious details about engines that you couldn't pick up on the job. About half the book is dedicated to valves, to their gear, and to adjustment. As you know, valve gears were the heart of engine operation, and Rose was out to teach engineers what he thought they should know.

Many of the "four hundred and twenty-two engravings" illustrated deal with valves and valve gear, but the rest will show you stationary, marine and traction engines in use in 1887, their internals and their auxiliary equipment. Beautiful engravings, Rare book! Back in print! Consider it. 8 1/2 x 11 softcover 322 pages No. 21214 \$26.95



EARLY STEAM!

STEAM AND ITS USES

by Dionysius Lardner
reprinted by Lindsay Publications

I have already reprinted Lardner's *Rudimentary Treatise on the Steam Engine* from 1848. Here we have a remarkable British book that explores the application of steam power in 1856. You get eighty nine engravings that take you everywhere from Handsworth Church where James Watt's Monument stands to the bowels of a steam locomotive and a steamship.

Major sections include steam, the steam engine, the locomotive, steam navigation, and locomotion by river and railway in the United States. Within the sections are chapters and sub-chapters in which Dr. Lardner discusses topics like boiler feeding apparatus, self-acting feeders, supply of steam to the cylinder, Seward's slides, effective pressure, the locomotive mechanism not generally understood, evaporating power of boiler determines efficacy of engine, fire-box, tubes through boiler, progress of steam navigation from 1812 to 1837, propellers, paddle-wheels and screws, and dozens of other illustrated technical topics.

You'll see the double-acting engine at the zinc works in City Road, London. You'll see elaborate cut-aways and drawings of the early locomotives that look remarkably quaint today.

You'll see an early Northwestern Railroad train on the viaduct near Watford, London. You'll examine the tender of such a train. You'll see marine steam engines in detail. You'll even see a Hudson River steamer and a Mississippi steam boat.

This is a beautifully illustrated volume that I knew must be reprinted as soon as I saw it. It takes you back to the days when steam was brand new. It's a great little historical book that will appeal to historians, steam buffs, railroaders, and modelmakers (and, yes, to book freaks of all varieties.) Just take a look as some of the illustrations reproduced here. You'll see what I mean. Get a copy. I think it's really a gem. I think you'll like it, too. 5x7 hardcover 224 pages
No. 21664 \$19.95

BOILERS - TYPES & DESIGN

by International Correspondence Schools
reprinted by Lindsay Publications

Where are you going to get the steam to run that engine you just designed and built? Of course, a boiler. But a boiler is frequently more difficult to come by than the engine. After all, a boiler is like a rocket in that it's a bomb waiting to go off. You

Boilers! Types & Designs

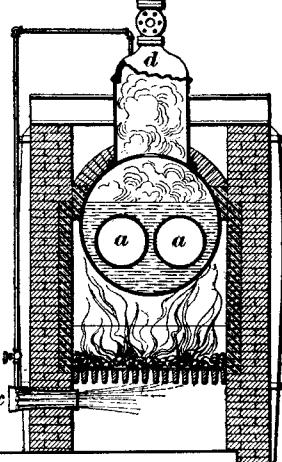
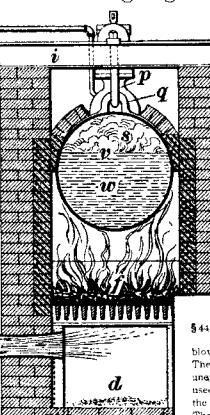
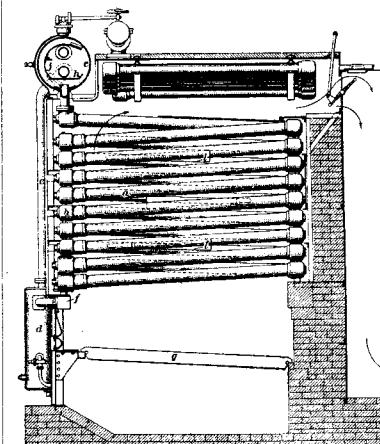
have to get the stored up energy out a controlled rate in order to put it to work.

From 1907 you get three of the best sections on boilers from the same books that yielded "Steam Engine Design" described elsewhere in this catalog. In the first section you'll be introduced to stationary boilers of the horizontal shell, flue and tubular types. You'll explore horizontal return-tubular boilers, and boilers with names like Cornish, Galloway, and Clyde. You'll see the locomotive or firebox boiler, vertical tubular boilers, the Babcox-Wilcox, the Heine, the Stirling, the Hazelton, the Morrin Climax boiler and more.

In the remaining two parts you'll investigate boiler design: proportions, power, and construction. Then you'll be exposed to formulas that when used with a pocket calculator will give you hard answers to "what-if" questions.

You'll learn how big you'll have to make the grate to get a certain number of horsepower, about iron and rivets, and about testing. Then you'll see the various arrangements of plates and rivets you can use to fabricate the boiler to a particular shape. You'll see both bolt and bracket boilers stays, as well as stays for both locomotive and marine boilers.

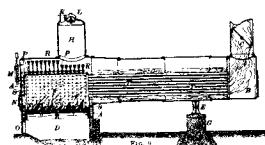
The formulas will give you ballpark figures for strength of plates, the number of rivets you'll need, allowable pressures on direct stays, width and thickness of reinforcing rings, number of tubes in a horizontal tube-return boiler and much more.



544 TYPES OF STEAM BOILERS

blow-off is at *z*. The main steam pipe is bolted on at *x*. The dry pipe *y* is a device for freezing the steam from any unevaporated water which may be mixed with it. It is often used in place of a dome on this form of boiler, and also on the other types of internally fired boilers just described. The manhole is shown at *d*.

11. Locomotive or Firebox Boiler.—Next to the multitudinous type, the locomotive or firebox boiler is probably more used than any other type. For railway service it is used exclusively and is largely used as a stationary boiler. Small portable boilers used for agricultural purposes are usually of the firebox type. The general construction of this type of boiler is shown in Fig. 9. The



shell is composed of two differently shaped parts riveted together. The end *a* is known as the front end, since, when used on a locomotive, it stands toward the front. The front part of the shell is cylindrical; the rear part is usually of a rectangular cross-section with vertical sides, or of a trapezoidal shape.

Fig. 9 shows the heads of a boiler to the shell. Figs. 8 and 9 show the head flanged and riveted to the shell. Iron for flanging should be of the best quality. The radius of the curve to which the head is flanged should be at least four times the thickness of the plate.

27. In Figs. 10 to 14 is shown the usual construction of the water legs and furnace doors of vertical and firebox

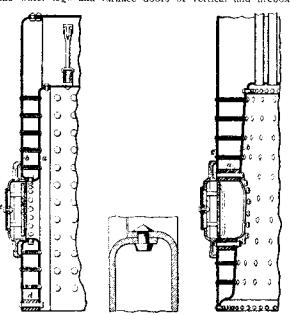


Fig. 10 shows the door constructed by flanging the furnace sheet *a* and the front sheet *b* of the boiler. Single riveting is shown here, although the joint is frequently double-riveted. An enlarged view of this construction is shown in Fig. 11. The door *c*, Fig. 10, is generally

This is NOT about building a particular boiler of a particular size. This is a textbook designed to introduce the 1907 apprentice to the state-of-the-art. If you decide to build a boiler, this can become your starting point. After you get an idea of where you are headed, you'll want to consult modern expensive engineering texts for pressure vessel standards. Remember a boiler is a bomb waiting to go off, and it is essential that you see what modern safety recommendations are now being made. Nevertheless, boilers built to these standards are still safely used on steam tractors at steam shows. So the technology does work, and work well.

If steam is your thing, and you're just starting to think about a boiler, this is a must-have. Good book. 5 1/2 x 8 1/2 softcover 134 pages
No. 22113 \$9.95

Catechism of the Steam Engine!

NEW CATECHISM OF THE STEAM ENGINE

by N. Hawkins, M.E.

reprinted by Lindsay Publications Inc

I've reprinted this turn-of-the-century bible on steam power at the suggestion of a number of people. It's really great.

You'll find page after page of illustrations, usually great old engravings, and detailed technical description on every conceivable steam power device from Corliss, McIntosh & Seymour, and Porter-Allen engines, to Conover independent jet condensers, steam road rollers, Baldwin Locomotives, and steam fire engines. You'll see everything

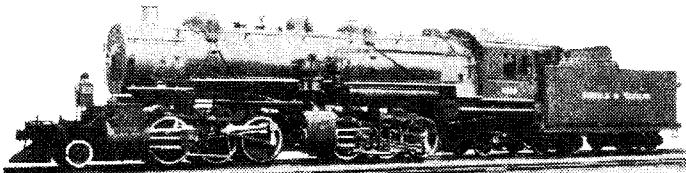
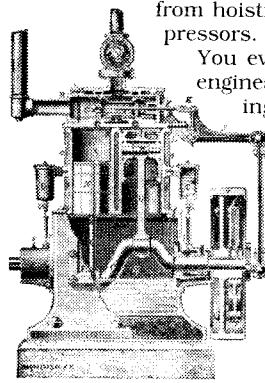
from hoisting engines to air and refrigeration compressors.

You even get chapters on gas, oil, and hot air engines. You'll see engravings and cut-away drawings of the Otto gas engine, the Simplex naptha engine, the de LaMater-Ericsson hot-air pumping engine, and others.

Original copies of this 1904 master reference are not easy to find, but you can have your own personal copy for much less than the cost of an original. This is a "must have" book for any steam enthusiast. Wall to wall illustrations! You'll like it. Order a copy today. 5 1/2 x 8 1/2 softcover 437 pages

No. 4619

\$15.95



LOCOMOTIVE VALVE GEAR

LOCOMOTIVE VALVES AND VALVE GEARS with a Special Treatise on Valve Setting

by Yoder & Wharen

"An explanation of the construction and action of the plain slide valve, the piston valve and the gears which operate them, as applied to locomotives."

Getting a steam engine to run isn't all that hard. Getting a steam engine to purr along at high efficiency is another matter - a matter solved only by intelligent use of sophisticated valve gear. Here you get the details of valve gear used on railroad locomotives in 1917.

Chapters include locomotive valves and valve gears, the Stephenson valve gear, the Walschaert valve gear, effects of altering the valve and its events, locomotive valve setting, an appendix and so on. The fourth chapter discusses the Baker, South-

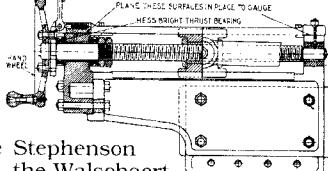
ern, Joy, Young, and Allen valve gear, and the Gooch stationary link.

Most valve gear books I've seen are loaded with geometric drawings teaching the design of the gear. Geometry is important, but this is somewhat different in that it is loaded with great views of locomotives, cross sections of valves and pistons, and detailed drawings of the gear. In other words, this isn't so much theory of design, as it is a handbook for locomotive shop men in keeping their engines running efficiently.

Excellent book. Great illustrations. Must have for railroad buffs, but useful for all steam enthusiasts. A reprint of an American book produced in England for British steam buffs. Get a copy! 5 1/2 x 8 1/2 hardcover 272 pages

No. 1344

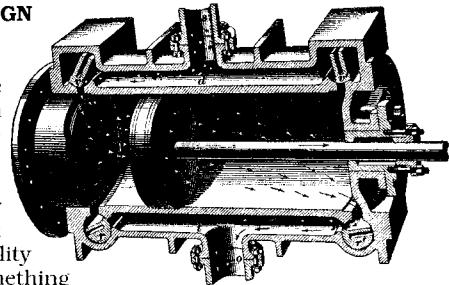
\$23.95



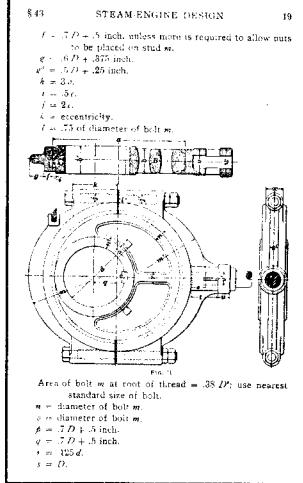
STEAM ENGINE DESIGN

reprinted by
Lindsay Publications

You can build simple steam engines from castings or stock material, make them run, and have a lot of fun. But just because your engine runs does not mean that it is a quality engine. If you want something more than just an engine that



Steam Engine Design



runs, one that provides reliability, power AND efficiency, you need to learn how to design one from an 1896 engineer.

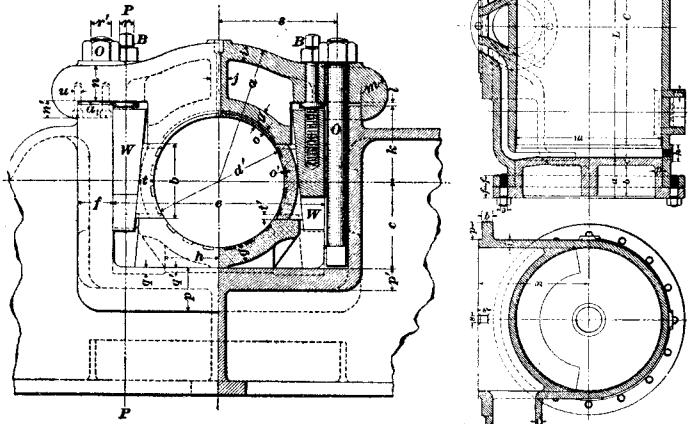
In the first section you'll learn the basics: all the components, how they fit together, and how they work. Then you'll learn about the choices and tradeoffs that must be made concerning expansion, valving, boiler pressure, piston speeds and more. Then you start plugging numbers into the formulas to come up with back pressure and point of exhaust closure for simple engines and engines with single swinging eccentrics.

Walk through calculations for simple, non-condensing engines, high speed automatic cutoff engines,

hoisting and locomotive engines, and multiple-expansion engines.

Calculate in detail the proportions of the cylinders, steam ports and passages, dimensions of the steam chest, Corliss engine cylinder proportions, diameter of the drive shaft, size of the journals, crankpins, crankshaft counterbalances, and on and on.

The last section will show you how to design crossheads for a variety of engines, eccentric rods, stuffing boxes, flywheels, sample proportions for existing successful engines and more. There's so much nitty-gritty detail here, that it will take you days and weeks to work the design out on your calculator, think



about it, revise it, and build it.

Don't expect to become an expert engine designer just by reading this book. But you will learn secrets and techniques that haven't been taught in almost a century. This is a great book on an unusual subject! A MUST book for steam buffs, mechanics and historians. Reasonably priced. Order a copy.

5 1/2 x 8 1/2 softcover 192 pages

No. 4104

\$9.95

Build a Locomotive!

**Massive 1892 Handbook!
Over 1,000 Drawings!**

MODERN LOCOMOTIVE CONSTRUCTION
by J G A Meyer

Build yourself a locomotive! Meyer was an associate editor of *American Machinist* magazine, a member of the ASME, and chief draftsman for the Grant Locomotive Works. If any one could take you by the hand and show you how to design an 1892 locomotive from the ground up, he could.

You learn every aspect of design and construction with over a thousand illustrations, most of them being incredibly detailed working drawings. You get detailed how-to knowledge that can only be acquired from working in the industry.

For instance, Meyer discusses milling special grooves in order to remove pressure from the back of the slide valve. Into the grooves are placed metal strips supported by springs. Meyer will tell you the master mechanics in the roundhouse disliked spiral springs because lubricating tallow would build

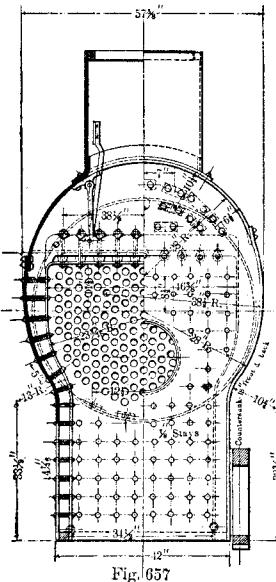
other than throw a few quotes at you and reproduce a few of the illustrations. The detail is mind boggling.

Let's suppose you're going to put a diamond-shaped smoke stack on your soft-coal-burning locomotive. Meyer shows you a diagram of a typical diamond stack. "...The cylindrical part D of the stack often consists of two shells, leaving an annular space about $\frac{5}{8}$ inch wide between them.

Sometimes four 1-inch holes are drilled through the outer shell just above the flange A, and another four holes are drilled through the outer shell near the top, for the purpose of creating a circulation of air through the annular space. This arrangement prevents the outer shell from becoming overheated and blister-

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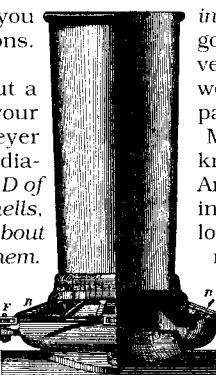
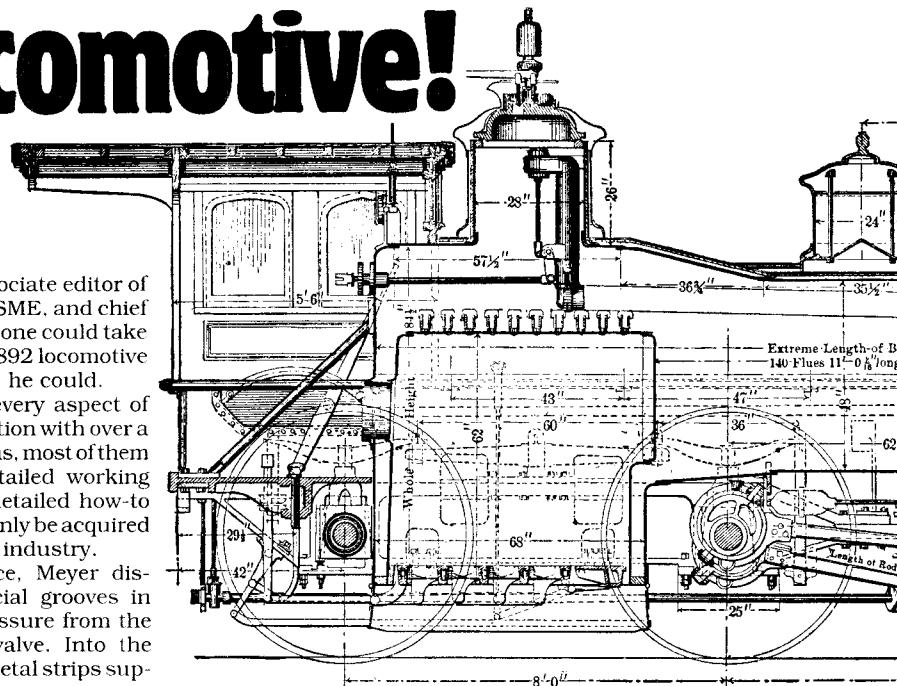
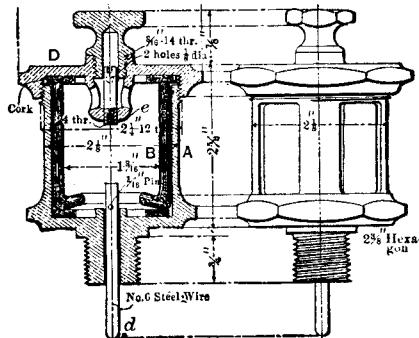
- Classification of Locomotives – Trains Resistance – Tractive Power – Weights of Engines
- Construction of Cylinders – Steam Pipes – Slide Valves • Valve Gear – Construction of Links – Pistons – Crossheads – Slides – Stuffing Boxes • Frames and Pedestals – Axle Boxes • Driving Axles – Driving Wheels – Counterbalance • Main-Rods – Side Rods – Crank-Pins • Throttle Pipes – Throttle Valve Gear – Safety Valves – Whistle – Pumps – Check Valves • Spring Gear and Springs • Boilers – Grate Surface – Heating Surface – Riveted Joints – Extension Fronts • Ash-Pans – Smoke-Stacks – Exhaust-Pipes • Sand-Boxes – Bells – Pilots – Engine Braces
- Engine Trucks • Oil-cups – Valves – Cocks – Injector • Tenders – Tender Trucks • Useful Rules, Formulas, and Data • Compound Locomotives.



up there. Elliptic springs solved the problem but lost their strength over time and created other unique problems.

You get that kind of detail and insider information throughout this big volume. Who on earth needs to know about the effect of lead counterbalance in the rim? ...or that bearing pressure can be significantly greater in the knuckle-joint pin as compared to a crank-pin? ...or why a sloping crown sheet is much safer when a locomotive is running down hill? You need to know these things and a thousand more if you restore locomotives, build models, study railroad history, or just want to impress the mourners at your mother-in-law's wake.

There is no way I can describe this book



...and on and on he goes. Blister the paint? I would be very proud to build an engine that would run well whether it were painted or not.

Meyer obviously was an expert. He knew what he was talking about. And he shares his expertise with us in this incredible volume. I took one look at this and knew it had to be reprinted for machinery and steam power fanatics. Reprinting this has been very expensive, hence the high price. But you get your money's worth and more.

This is something very special for connoisseurs and collectors – a must-have. For the rest of us, it is a visual joy, an exploration of machinery from the glorious age of steam power. Full tilt! Get a copy of this. Put a second mortgage on your house if you have to. Seriously, if the price is too steep for you, consider putting it on your charge card and paying it off in installments. But do get a copy. You'll like this. 8 1/2 x 11 hardcover 685 pages

No. 21443

\$44.95

Author's Goal

"The series of articles treating on Modern Locomotive Construction recently published in the *American Machinist*, which, by the request of its editor, I commenced while I was engaged as chief draftsman at the Grant Locomotive Works, Paterson, N.J. . . .

The favorable recognition which these papers have received induced me to revise them thoroughly and add more than fifty per cent of new matter, with the necessary illustrations, which also had to be made expressly for the purpose, and to publish the whole in book form.

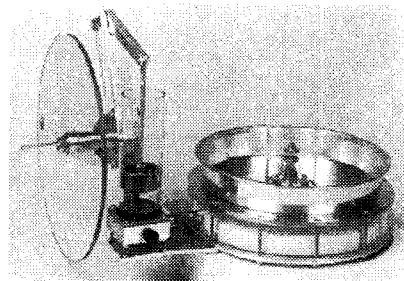
...The aim is to assist practical men ... who are about to enter the business of locomotive building..."

Low Temp Differential Stirling Engines!

**LOW TEMPERATURE
DIFFERENTIAL STIRLING ENGINES**
by James R. Senft

A new low delta T engine book! Engineers us the Greek letter delta, D, to mean "difference." A low delta T is short hand to mean a small difference in T, or temperature. These are engines designed to run on low-grade heat. In fact some of these engines will run on the heat given off by your hand, your television or your favorite political candidate.

The author writes, "Much of my recent university research has been in this area, and this book tells the story of the origin, development, theory, and operation of these



engines in terms anyone can understand. The book also covers the construction of these engines including complete plans and instructions for building a model engine which will run truly effortlessly when held in your warm hand."

This is another book from Doc Senft, the guru of Stirling engines. Another must have book for the engine nut. (So get out your check book...) Here's your chance to build an

engine that will amaze your engine-ignorant neighbors and relatives. Tell them it's magic or perpetual machine. They won't have a clue. They'll think you're a genius. (And I sure won't tell 'em otherwise, now will I?) Get a copy! 5 1/2 x 8 softcover 88 pages
No. 1408

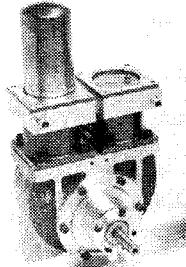
\$12.95

MAKING STIRLING ENGINES

MAKING STIRLING ENGINES
by Andy Ross

As you know, a Stirling engine is an external combustion engine invented in 1816 that uses air instead of steam to transfer heat energy. Engines have been built that have been powered by no more than heat of a man's hand, or conversely, by the lack of heat from a glass of ice water.

Ross's book is a great text that Stirling engine buffs will tell you is a "must have." You get an introduction to the engine, a brief history, how it works, Andy's beginnings in engine construction, and more. Headings from the book include: other rhombics, the yoke drive, diversions, renaissance of the yoke drive, model airplane fever, the D-90 engine, and complete specs on six of his engines.

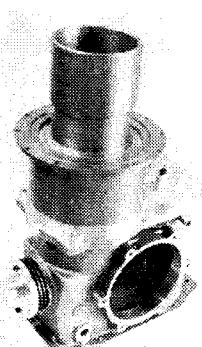


You'll see photos of the incredibly beautiful engines he has built: the 300cc DOE rhombic, the 15cc alpha with yoke drive, 35cc yoke Rider engine, the V-15 engine, the C-60, the V-90, the D-90 driving a mountain bicycle, the D-90 test rig for use as an outboard motor and others.

What you get here is a lengthy report revealing the experiments of an expert machinist and engineer. You get text loaded with technical details, and many, many views of his engines. But no detailed plans or how-to.

Small, top quality, and definitely worth having! Get one. 8 1/2 x 11 with plastic spiral binding, 60 pages heavily illustrated
No. 1373

\$14.95

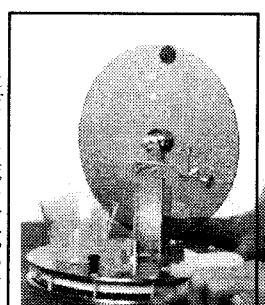


INTRO TO STIRLING ENGINES

**AN INTRODUCTION TO
STIRLING ENGINES**
by James R. Senft

You get a simple but accurate explanation of how Stirling engines work, why they work, and simplified theory surrounding their operation. If you're going to design and build, or simply modify, a Stirling engine, you need this theory. And a little theory goes a long, long way toward improving chances for success.

You'll learn about heat engines, heat engines and laws of thermodynamics, efficiency and the second law, the displacer, the Stirling thermodynamic cycle, a complete Stirling engine, other engine mechanisms, heat losses, the regenerator, the single-cyl-



inder configuration, the ideal Stirling cycle, two-piston Stirling engines, pressurization, modern development, and a bibliography.

You get lots of old engravings of engines (many are to be found in Lindsay books), but you also get to see amazing new engines, the L-27 Ringbom solar engine, the P-19 Stirling engine that runs on the warmth of a human hand, engines that pump water, run automobiles, and more.

Small book. Great info. Well written. Great ideas for engines, and other engine sources. 1993. Get a copy. 5 1/2 x 8 softcover 80 pages
No. 1374



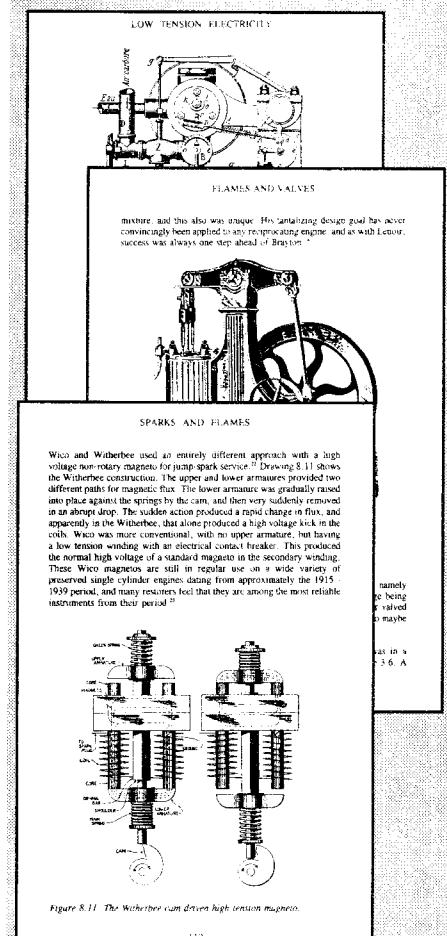
\$11.95

History of Ignition Systems

SPARKS AND FLAMES
by Crawford MacKeand

Here you get the history of ignition systems in engines from their earliest roots in the 1600's on up through the twentieth century. It's a result of Gas Engine Magazine's 1995 European gas engine tour.

Chapters include: outline history of internal combustion, flames and valves, hot tubes and surfaces, sparks, low tension electricity, high tension electricity, the energy for ignition, compression ignition, theories of ignition, some practical aspects, and more.



This is a fun history of the "firing pin" of internal combustion engines. You get great illustrations of magnetos, spark plugs, coils, and even a bizarre engine with a built-in Wimshurst machine to supply the spark! There are interesting systems you've probably never seen like Rollason's 1889 flame injection ignition system. Or the oscillator magneto.

If you're an engine nut, this is a great addition to your engine book collection. Once you get the fuel and air into the cylinder, you gotta set fire to it somehow. This will show you how it has been done. Get a copy. It's good. 6x9 softcover 168 pages
No. 1444

\$14.95

Build a Stirling Engine!

THE STIRLING ENGINE MANUAL

by James G. Rizzo

Wow! No other way to say it. Just plain, wow!

Rizzo's book "Modelling Stirling and Hot Air Engines" appeared in England in 1985. This is a newly formatted updated version of his original title.

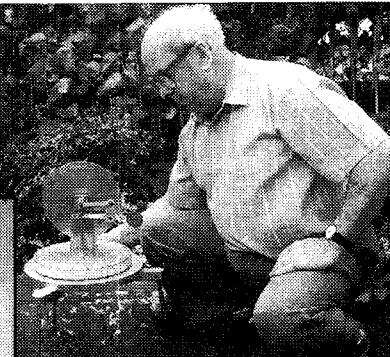
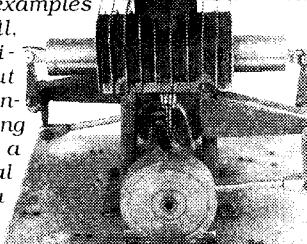
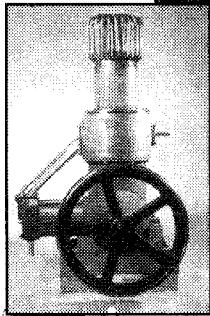
He says: "It is still a book for beginners to the hobby of building Stirling Engines..."

The first part of the book covers the history of the engine....

The second part... deals with projects well within the capabilities of the beginner or a home engineer with modest workshop facilities. This section covers a range of examples from small, uncomplicated but

highly instructive and entertaining engines, to two types of Stirling engines not previously covered, a Low Temperature Differential Stirling Engine, and a Pressurised Stirling Engine...

[I believe] this is an engine that still has scope for further development; secondly that the home engineer has much to offer in its development... thirdly, this need not be an expensive hobby, since a fair amount of materials used can be obtained cheaply or from scrap yards..."



Many people contributed to the contents of this book including Andy Ross, James Senft, Roy Darlington, Richard White, and a number of others.

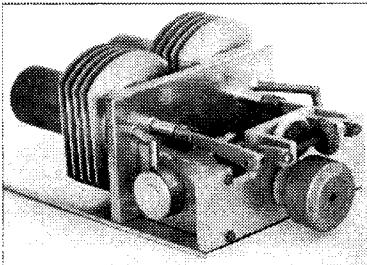
You get detailed text and great illustrations. You don't get dimensioned plans, but you do get photos, side elevation drawings, front elevations, tables of all important dimensions and specifications, and more. I've not seen more practical nuts-and-bolts hands-on how-to on Stirling engines in one place before. This beauty comes from England and because of exchange rates, prices are a bit high and can vary. But you get a beautiful hardcover book loaded with rare info. It's worth having. All I can say is Wow! 8 x 11 1/2 hardcover 183 pages wall-to-wall illustrations and four pages of color photos

No. 1375

\$35.95

CONTENTS

What is a Stirling Cycle engine? • How the "Closed Cycle" Hot Air Engine works • The Regenerator • Heating and Cooling • Pressurisation • Designing and Building model Stirling engines • Workshop Practice • Starting and Running an engine • Of Models and Modelling • How to Construct "Dolly" I • How to Construct "Dolly II" • How to Construct "DOP-YU", a double acting Stirling Engine • How to Construct "Lolly" • How to Construct "Lolly II", a V-type engine • How to Construct "Sturdy" • How to Construct "Mariner", a twin cylinder Stirling engine • The Ericsson Hot Air Pumping engines • How to Construct "Prova II", a competition type co-axial Stirling engine • How to Construct "Sunspot", a solar-powered Stirling engine • How to Construct "Dyna", a demonstration engine • Low Temperature Differential & Ringbom Stirling engines • How to Construct "Tuba" • How to Measure engine performance



Hot Air Engine Patents!

HOT AIR ENGINE PATENTS

compiled by Lindsay Publications

Here are seventeen of the most interesting US Patents for hot-air engines (Stirling engines) from 1871 through 1959. In each case you get the whole patent: all drawings, complete description of operation and claims.

You get classics like the A K Rider patent from 1871 and J Ericsson's patent from 1880. But there are others, totally new to me, that bear examination. How about the four cylinder beam engine of Woodbury, Merrill, Patten and Woodbury

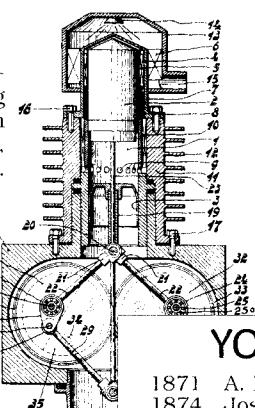
from 1880? Or the Eimecke double-acting engine from

1883? The

huge Willcox four-cylinder engine from 1883 is actually mounted atop two brick ovens that power it. The Stoddard patent of 1919 claims that his hot-air engine is so compact and powerful that it can be used to power an automobile (at least of that era...).

Smith's heat engine from 1930 is another impressive four cylinder machine: a true four cylinders since each cylinder has the power piston AND a displacer piston. Check out Meyer's 1959 patent detailing the rhombic drive. And more.

Be warned that some of these patents are hard to read. They look like "blow backs", that is, enlarge-



YOU GET

- 1871 A. K. Rider
- 1874 Joseph Hirsch
- 1880 J. Ericsson
- 1880 Woodbury, Merrill, Patten & Woodbury
- 1883 G., O., & W. Eimecke
- 1883 Stephen Wilcox
- 1888 Thomas J. Rider
- 1897 C. A. Anderson & E. A. Ericksson
- 1901 Charles C. Cronwall
- 1901 Frank W. Morse & Frank B. Hubbard
- 1915 Edwin F. Engel & Lars Anderson
- 1913 Lars Anderson & Edwin F. Engel
- 1919 Elliott J. Stoddard
- 1930 Harry F. Smith
- 1935 Royal Lee
- 1948 Frits Karl DuPre
- 1959 Roelf Jan Meyer

ments from microfilms of poor photocopies. The drawings are in good shape, but some of the copy is difficult to read. In fact I ordered additional copies of several patents on different occasions thinking that I might get better quality copies. No such luck.

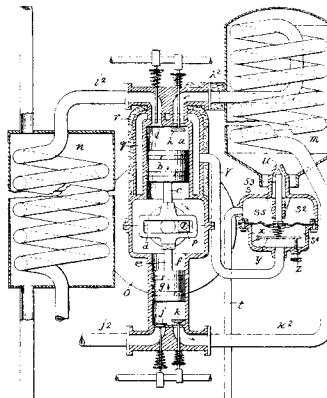
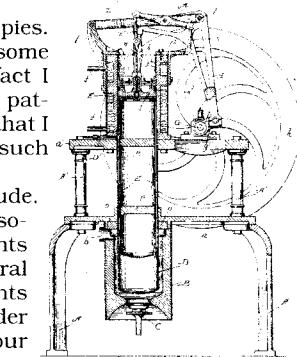
There are patents we did not include. Like minor improvements or accessories. There were many recent patents detailing Stirling engines as an integral part of a refrigerator. Some of the patents here include references to other older patents. You can use them to do your

own research, but I think you'll find what I've found. The most interesting patents are right here.

These are not construction plans. And I don't know where to get any. This is for the engine nut who wants historical background, ideas for new developments, wants to develop an unusual engine to exhibit,

or wants something more interesting than quarterback sacks to go with his stein of homebrew. Inexpensive. Entertaining. Surprisingly fun. Get one. 8 1/2 x 11 softcover 93 pages

No. 21958

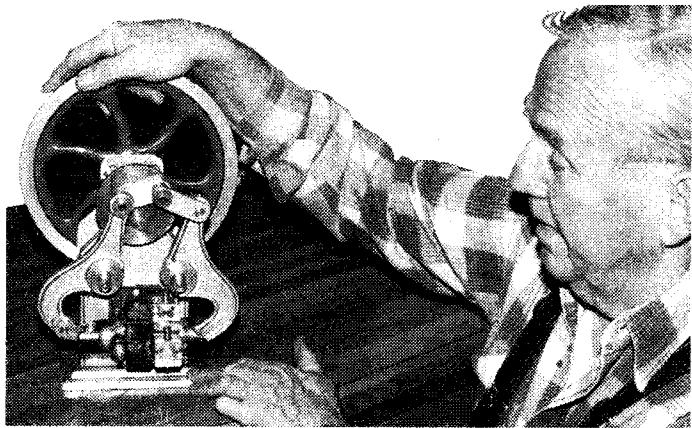
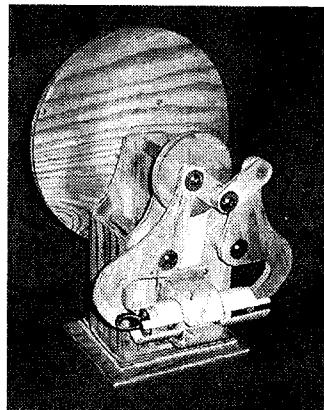


\$9.95

New Gingery Engine Being Developed from Patents

Deep in the secret Gingery labs, Mad Machinist Dave is building an opposed piston Atkinson engine. Here is his wooden prototype. At our website through animation you can watch this prototype "run". The patent for this engine is found in IC Engines Vol 1., and Dave and Vince are planning to publish a book of plans someday. Below is the metal version of the engine, along with its creator. This engine is true to Atkinson's original design. It does NOT operate like a hit-n-miss engine. More details can be found on our website.

<http://www.keynet.net/~lindsay>



Coming Soon...



Dave Gingery's Version of the

Hayne's Hot Air Engine

Because of the enormous expense of printing and mailing catalogs, we are forced to mail catalogs to only those people who are interested in receiving them. The best and only sure-fire way you can be assured of getting future catalogs is to order books. And that makes sense. If you can't find at least ONE book in this catalog that interests you enough to order, then there's little reason to continue sending catalogs. So order today, and we'll send new catalogs as they are printed!

Will You Get New Catalogs?

Secrets of Unusual Internal Combustion Engines

IC ENGINES VOL. 1

U.S. Patent Office
reprinted by Lindsay Publications Inc

More unusual engines! Complete patents! Do they run. Most likely. Run well? I wonder.

What you get here are fourteen unusual patents from 1881 through 1890 that were chosen on the basis of their uniqueness.

You get Ravel's Oscillating Gas motor, AK Rider's gas engine, Hopkins' 1883 beam gas engine, Hiram Maxim's unusual vertical gas motor from 1884 as well as his short, squat combination internal combustion or hot air engine design, and more.

Included are all three James Atkinson patents. You get his original 1884 patent of a four-stroke gas engine with a slide valve. You get his unusual 1886 opposed piston design with its unusual linkage. (Rumor has it that the Lewis-Gingery duo, having again escaped from the engine builder's sanitarium, are developing a model of this unusual design.) And there is, of course, the classic 1887 design already built by Jim Lewis and Dave Gingery and published by the Gingery's that allows four strokes on one revolution of the flywheel. It's

all here. The original specs from the man who invented it.

My favorite is the monstrous Hibbard rotary gas engine. You get seven pages of complex detailed drawings of an engine that must have been too complex for its time. This patent is also one of the poorest in quality that I've seen. (It looks like a copy of a microfilm of a copy...) With patience you can figure out this mind boggling engine.

You may want to try building a working replica of the Sharpneek rotary gas engine, or the rocking beam hydrocarbon engine of Brayton. It's not something you see every day.

You get the complete patents with all text and all drawings. At three dollars each this set would have cost you \$42 had you ordered them from the patent office. You get them here in one convenient binding at a fraction of that cost.

Fascinating engines! Get a copy. 8 1/2 x 11 softcover 95 pages
No. 22016 \$9.95

Fourteen Unusual Patents!

Ravel 1881 • Rider 1881 • Hopkins (3) 1883, '84, '85
• Maxim (3) 1884 • Atkinson (3) 1884, '86, '87 •
Hibbard 1890 Sharpneek 1890 • Brayton 1890

DIESEL'S ENGINES

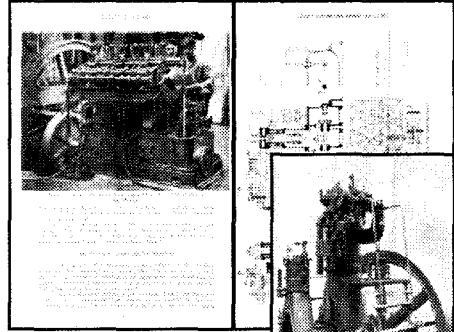
DIESEL'S ENGINES

by Lyle Cummins

This is a book about diesels written by a Cummins.

Not only is Lyle a member of the Diesel engine dynasty, he's also a mechanical engineer (holding a number of engine patents) and engine expert in his own right. And this is one great book.

"Diesel's Engine is the readable and comprehensive history of the man and the engine. It traces the life of an obsessed engineer and his contemporaries who brought the world's most efficient heat machine to the marketplace. Rudolf Diesel's ideas were often ahead of their time, and his engine endured failures and setbacks until new technologies were found. Only interim, imaginative solutions overcame the frustrating problems encountered."



... His engine created an international industry through the struggles of risk-taking licensees who turned it into a reliable, land-based powerplant. It soon went to sea as propulsion for commerce and underwater weapons of destruction.

... Above all, Diesel's Engine is about a troubled man who devoted his life to a dream, yet at his zenith of fame lost control over its fate.

This is very readable, loaded with mechanical drawings, photos of people and especially of all types of diesel engines in factories, ships, locomotives, and those nasty WWI German submarines. You get nitty-gritty detail about cylinders, displacements, bhp, numbers built and all that with much info coming from German archives. This history ends in 1918.

Expensive book! But really underpriced once you see the material Lyle Cummins drops in your lap. It's big - almost 3" thick, and that makes it a pain for us to pack it and ship it to you. I don't like to work, so don't order it unless you really want it. But then I think you'd be a damned fool not to want it. Great book. Get one. 7 x 10 1/2 hardcover 746 pages

No. 1398

\$55.00

Partial Contents

CHAPTER I: Introductory Historical Progress of Explosive Power CHAPTER II Theory of the Gas and Gasoline Engines.—Heat and its Work.—Isothermal and Adiabatic Law.—Formulas and Examples.—Tables CHAPTER III Utilization of Heat and its Efficiency in Explosive Motors.—Tables and Diagrams.—Temperatures and Pressures. Formulas and Examples CHAPTER IV Retarded Combustion, Wall-Cooling, and Compression Efficiencies.—Advanced Ignition. Diagrams CHAPTER V Compression in Explosive Motors and its Work.—Formulas, Tables, and Diagram.—Examples .. CHAPTER VI Causes of Loss and Inefficiency in Explosive Motors.—Combustion Chamber, its Form and Influence .. CHAPTER VII Economy of the Gas-Engine for Electric Lighting.—Merits of the Two and Four Cycle Type.—Charge Distribution CHAPTER VIII The Materials of Power in Explosive Engines.—Illuminating Gas, Natural Gas, Producer-Gas, Gasoline, Kerosene, Acetylene, and Alcohol.—Composition and Fuel Valves.—Tables .. CHAPTER IX Carbureters and Vaporizers.—Vapor-Gas for Explosive Motors.—Atomizing Carbureters and Vaporizers.—Methods of Starting Motors . CHAPTER X Cylinder Capacity of Gas and Gasoline Engines.—Tables of Sizes and Powers. Cylinder Diameter, Stroke, and Motor Parts.—Table of Motor Dimensions . CHAPTER XI Governors and Valve-Gear. Fly-Ball, Inertia, and Pendulum Types. Direct Valve-Gear.—Cams CHAPTER XII Explosive-Motor Ignition.—Hot-Tube Igniters. Timing Valves. Electric Ignition.—Primary Batteries. Sparkling Coils, Magnets, Dynamos, and Multicylinder Ignition.—Break-Spark Devices. Ignition-Plugs.—Exploder, Jump-Spark Coil.—Dash Coil.—Non-Synchronous Action of Vibrator.—Wiring for Sparking and Jump-Spark Coils.—Multiple-Spark Timer . . . CHAPTER XIII Cylinder Lubrication.—Mufflers.—Gas-Bag.—Constant Oil-Feed. CHAPTER XIV Constructive Details and Parts of the Explosive Motor.—Cylinder, Piston, Piston-Rod, Crank, Journal Bearings, and Counter-Balance. "Self-Oiling" Journal Box CHAPTER XV Explosive-Motor Dimensions.—Formulas for Parts.—Worm-Gear. Valves and Their Design.—Rotary Valves. Motor-Cycles.—Cam Design.—Diagrams CHAPTER XVI Types and Details of the Explosive Motor.—Day Model.—Root Model.—Non-Vibrating Model.—Automobile and Stationary Models.—Differential Piston and Scavenging Models.—Plans and Models of Various Builders.—Air-Cooled Motor . —The Lightest Motor .—Balanced and Combination Motors.—Special Valves and Valve Gear.—Kerosene Motors.—Double - Acting Motors.—Opposed Cylinder Motors.—Water-Cooled Valves.—Curious Two-Cylinder Motor . —The Scavenging Engine—Cooling Radiators.—Fan Cooled Motor.—Starting Clutches.—Reversing Gear.—Speed Gears for Automobiles.—Vehicle-Motor Starter.—Foot Treadle.—Safety Device . CHAPTER XVII The Measurement of Power.—Prony Brake.—Tachometer.—The Indicator and its Work.—Vibration of Buildings and Floors CHAPTER XVIII The Management of Explosive Motors.—Pointers on Explosive Motors.—Troubles Explained . . . CHAPTER XIX Explosive-Engine Testing.—Back-Firing in Explosive Motors.—Fire Underwriters' Regulations for Gasoline-Engines . CHAPTER XX Gas and Gasoline Motors.—The Amateur's Motor.—Gemmer, Westinghouse, Lambert, Union, Blakeslee, Hatrig, Root & Vandervoort, Hubbard, Fairbanks, Morse and Company, Motors, Crude-Oil Generators . CHAPTER XXI Marine Motors. Marine Engines and Their Work. Table. Size of Engines and Boats.—Bridgeport, Yacht Gas-Engine and Launch Company Motors. Racing Launch. Godshalk and Company Motors. — J.J. Parker Company and Standard Construction Company Motors. —Trawl Boats. Mianus, Hall Brothers', Lozier, Cushman, and Smalley Motors.—Speed Boats. Cooling the Cylinders.—Offset Cylinder Ignition and Lighting Outfit. Make-and-Break Ignition.—Working Boats.—Wiring Make-and-Break Engines.—The Fisher and much more...

Classic Engine Text!

GAS, GASOLINE AND OIL-ENGINES

by Gardner D Hiscox

reprinted by Lindsay Publications

"A complete and practical work treating on gas, gasoline, kerosene, and crude petroleum oil-engines including producer-gas plants for gas-engine owners, gas engineers, and intending purchasers of gas-engines, fully describing and illustrating the theory, design, construction and management of the explosive motor for stationary, marine and vehicle motor power."

This is a classic loaded with photo's, drawings, and engravings of engines,

and all the components that go into their construction from ignition systems to valve mechanisms, from clutches to lubrication pumps. You even get off-the-wall info on propellers for marine engines and use of steam engine indicators on IC engines.

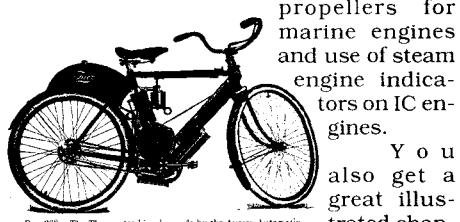


FIG. 369.—The Thor motor-cycle made by the Aurora Automatic Machinery Company, Aurora, Ill.

You also get a great illustrated chapter on converting coal into producer gas. These are big

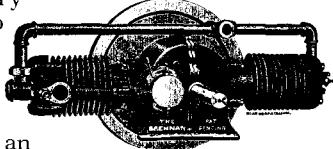


FIG. 370.—5-horse-power, light-weight, air-cooled runabout motor.

stationary plants to turn coal into gases that can be burned by an engine. This is great info for the guy who wants to perfect a small bumper mounted unit for his car so that he can burn wood instead of gasoline. These units may also be adaptable to the production of coke. Don't know. You figure it out.

The last chapter is a great research tool. You get the dates, numbers and inventor names of several thousand engine patents granted between 1875 and 1910. You get NO details however. This can be useful if you're researching the output of a particular inventor, say, Diesel for instance. But beyond that, many of the patents are of little interest.

Great book. A must have for the engine nut. Classic text. Loaded with rare information of all types. Get a copy. 18th edition 1910 - 5 1/2 x 8 1/2 softcover 476 pages

No. 22032

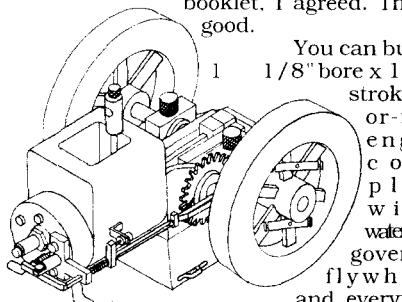
\$19.95

Build a Hit & Miss Engine

HIT & MISS ENGINE PLANS!

by Harold Depenbusch

When I picked up the phone, Dave Gingery started telling me how I should offer these plans, that they were some of the best he had seen. After I saw a copy of the plans booklet, I agreed. They're good.



You can build a 1 1/8" bore x 1 1/2" stroke hit-or-miss engine complete with water jacket, governor, flywheels and everything else without the use of castings. In this booklet you get typewritten how-to in the first half with all the construction drawings in the back. You'll learn how to make the base, the cylinder, oiler, water jacket, flywheels, crankshaft, main bearings, heads, valves, con rod, rings, cam, governor parts and all the rest.

Again, these plans are excellent. The book format is not all that professional, but the info Depenbusch delivers sure is. If you like to build models, I highly recommend this! 8 1/2 x 11 stapled booklet about 40 pages.

No. 1252

\$15.95

CASE STEAM ENGINE MANUAL

CASE STEAM ENGINE MANUAL

by J. I. Case Co.

Learn to run a World War I Case steam traction engine from this well-illustrated reprint. Chapters include: fitting up and starting a new engine, the feed water, firing with various fuels, lubrication and bearing adjustment, handling the engine, the engine proper, the valve gear, the boiler, traction gearing, and the compounded engine.

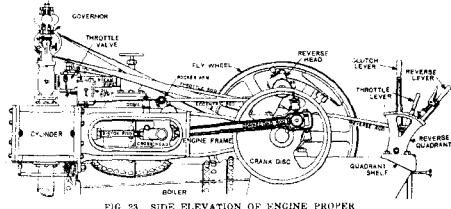
Learn how to use "gage" - or "try" - cocks, how to start a Penberthy injector and what to do if it fails to work, how to pack the water-glass, how to pack a gear driven injector pump, how to regrind check valves, how to fire with low-grade coal and straw, how to adjust connecting rod brasses, details on rebabbitting main frame bearings and upper cannon bearing, and lots more.

If you're into steam, get a copy of this. It's interesting and low cost. Excellent buy.

5 1/2 x 8 1/2 booklet 70 pages

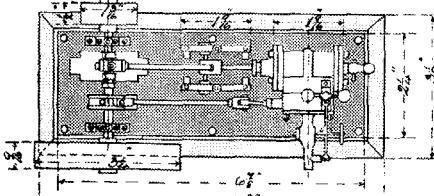
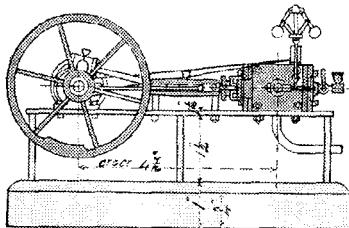
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\$6.00



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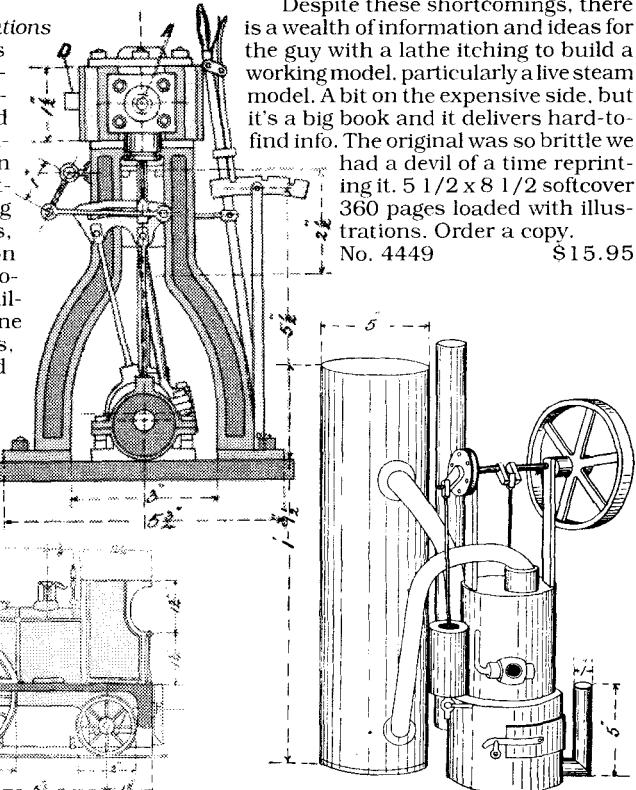
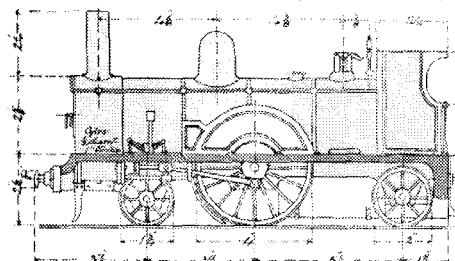
Lindsay Publications Inc., PO Box 538, Bradley IL 60915 • 815/935-5353



MODEL ENGINE CONSTRUCTION

by J. Alexander
reprinted by Lindsay Publications

If you're looking for projects to build, you'll enjoy this reprint. Originally published simultaneously in London and New York in 1894, this unusual book contains thirteen chapters: tools, boilers and fittings, the steam engine, fitting up the engine, reversing gears, stationary engines, traction and portable engines, locomotive engines and tenders, railway cars, compound marine engines, engine proportions, patterns and castings, and the last chapter covers a hot-air engine, small power engine, and notes. The illustrations from the 25 large and crumpling foldout plan sheets glued into the back



Model Engine Construction

of the original book have been reprinted on pages following the text.

You can build for instance, a beam engine with a 5/8" bore and 7/8" stroke with a 3 1/2" flywheel. The plans for the traction engine locomotive, marine engine, and the rest are of comparable size.

You must realize, of course, that each project could be a whole book rather than a chapter as it is here. The plans are fairly detailed but not quite to the degree you see in modern model magazines. Many of these models are based on castings which are not commercially available.

Despite these shortcomings, there is a wealth of information and ideas for the guy with a lathe itching to build a working model, particularly a live steam model. A bit on the expensive side, but it's a big book and it delivers hard-to-find info. The original was so brittle we had a devil of a time reprinting it. 5 1/2 x 8 1/2 softcover 360 pages loaded with illustrations. Order a copy.

No. 4449 \$15.95

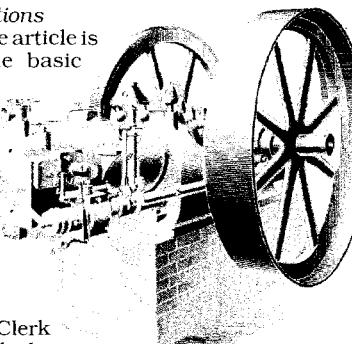
Secrets of One Lung Engines!

GAS ENGINE SECRETS

reprinted by Lindsay Publications

The first 1897-98 magazine article is quite general explaining the basic engine theory you've known since grade school. But then you explore a one-lung engine with slide valve, poppet valves, ignition systems, and more. You'll see how to turn coal into producer gas for powering gas engines. This is similar to the process for gasifying wood. Then you explore two-cycle engines, the Clerk Engine, vertical engines, a valveless engine, and an early carburetor.

Next examine ignition systems: flame ignition, hot-tube igniters, and electrical types.



Timing, oilers and mufflers are discussed. A whole section discusses governors, and another covers starting an engine with compressed-air and gunpowder! The last chapter will show you how to test an engine on a homebuilt prony brake, and more.

Anyone who collects and restores old engines, or who builds replicas should enjoy this. Beautiful engravings and drawings. Great reading at a

low price. Get a copy!

5 1/2 x 8 1/2 booklet 36 pages

No. 897

\$4.50

Model Making!

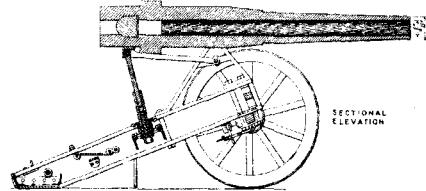
Over 400 Pages of Great Ideas!

MODEL MAKING

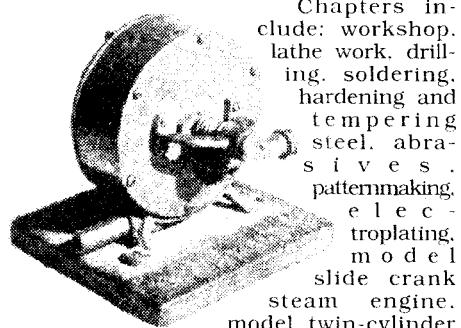
by Raymond F Yates

reprinted by Lindsay Publications

"A practical treatise for the amateur and professional mechanic - giving instructions on the various processes and operation involved in modelmaking and the actual construction of numerous models, including steam engines, speedboats, guns, locomotives, cranes, etc. Lathe work, pattern work, electroplating, soft and hard soldering, grinding, drilling, etc., are also included."

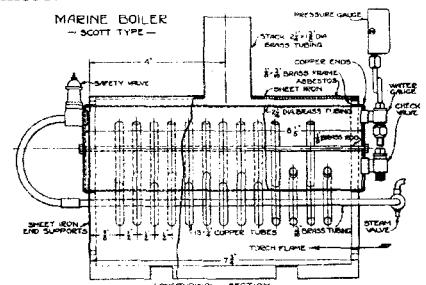


Sounds like a great book doesn't it? Actually the claims are a little inflated because the author tries to cover too much. Each topic could be a book in itself. Still, it is fascinating, and guaranteed to fill your head with ideas.



Chapters include: workshop, lathe work, drilling, soldering, hardening and tempering steel, abrasives, patterning, electroplating, model slide crank steam engine, model twin-cylinder

engine, single-cylinder engines, model twin-cylinder marine engine, flash steam plants, flash steam plant for model airplanes, model steam turbine, model boilers, boiler fittings, model hydroplane, lake freighter, gasoline engine, model steam locomotive tank, siege gun, steam yacht, 34" monoplane and much more!



Some of these projects need castings which are not available. But with all the dimensions and photos given, you should be able to modify and improve the designs. This is great raw material for the model builder.

So if you have a small lathe and want to build something in the worst way, or you just collect plans, or you just want a great book for a rainy afternoon, grab this gem from 1925. Loaded with great illustrations and great ideas. Don't pass it up. Order a copy today! 5 1/2 x 8 1/2 paperback 430 pages No. 4325 \$14.95

Steam Airplane! Model Boilers!

STEAM AIRPLANE & SMALL POWER BOILERS

from Model Engineer 1913

reprinted by
Lindsay Publications

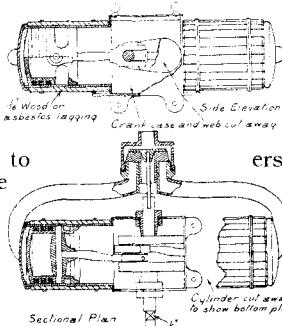
Here you get a reprint of articles from very old issues of The Model Engineer on how to build a large model airplane driven by a flash steam boiler and engine. You also get details on the design of small power boilers and feed pumps. We first brought this out in 1984, but retired it when we ran out. It's back. At least for a while.

The airplane is ancient. After all it was 1913. It looks like something Langley or Wilbur & Orville would have built. Details on building the airplane are not given since this is about building the unique flash steam boiler and two-cylinder opposed engine.

The author went through a number of prototypes before building a reliable power plant. He claims the engine is the most difficult part to fabricate but is not beyond the abilities of the average modelmaker. The cylinder is of German silver tube, with a steel crankcase that has been carefully brazed. He'll tell you how to fabricate the cylinder, rings, rotary valve and all the rest. When complete, the engine weighs less than 5 ounces.

The success of the superheated, flash steam boiler depends on the feedwater pump. You'll learn the details. You'll learn how to fabricate the boiler from 8 feet of 3/16th steel tube, how to build the burner, steam chest and all the rest. You'll even be shown how to carve the 16" propeller for the airplane. Does it work? In the final paragraphs, the author tells of three great flights one morning of over a quarter mile each. Then the plane hit a tree!

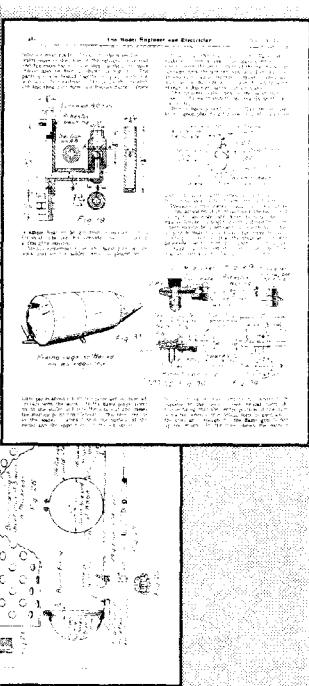
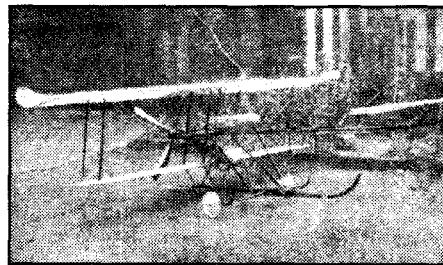
Most of the back half of this booklet is dedicated to the design small boilers and feedwater pumps. Model makers kept ask-



ing the same questions. So author put together this lengthy article to explain the boiler sizes needed, how they should be built, materials to be used, inspections, details on safety valves, alcohol burners, gasoline burners, and even flash steam boilers. Valuable, useable boiler info.

This is all nitty-gritty how-to written by people who did it more than eight decades ago. Maybe you could build a huge radio control model and power it with steam. Maybe you could scale it way up and be the first guy in the neighborhood with a coal-powered C5A transport, or a wood fired stealth fighter! Or you could be the first dude in the rubber room for having even conceived such an idea!

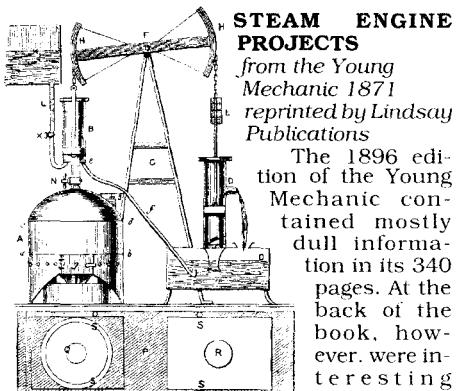
Great reading. Rare how-to. Inexpensive. Get a copy today! 8 1/2 x 11 booklet 39 pages No. 876 \$6.95



Steam Engine Projects

STEAM ENGINE PROJECTS

from the Young Mechanic 1871
reprinted by Lindsay Publications



how to build simple but functioning steam engines and their boilers. Only those chapters have been reprinted here.

Chapters include: How to Make a Steam Engine, Watt's Engine, and How to Make an Engine. You'll learn about the basics of steam power, packing glands, Newcomen's engine, details of Watt's steam engine, and throughout details on building both the engine and boiler.

Certainly, this is not a sophisticated engine, but IT IS an engine that almost anyone should be able to build and operate. Even if you don't build the engine described, you will find useful ideas that you can apply to your own design.

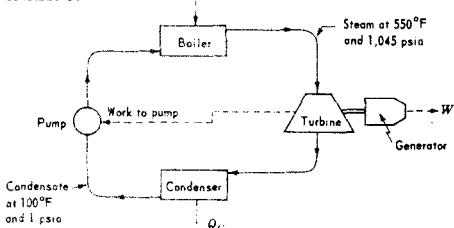
It's great old information at a very reasonable price. Order a copy. 5 1/2 x 8 1/2 softcover 64 pages leatherette cover No. 20234 \$4.95

THERMO-DYNAMICS!

UNDERSTANDING THERMODYNAMICS

by H C Van Ness

The brightest minds over the centuries have observed nature, and have developed explanations for what they see. They don't know everything, obviously, but their explanations are very sound. Just look at the performance of your automobile engine, or better yet, an electrical generating station or the space shuttle. The proof is in the performance.



Thermodynamics is the study of heat energy, primarily. If you fancy yourself as an engine expert and don't know what is in this book, you might make a fool of yourself in the eyes of those who do know. (Did you know your refrigerator is a steam engine in reverse?) Of course you may be one of the wackos who "knows" everything in this book is false, and that you alone are going to invent a perpetual motion machine. Perhaps. But I wouldn't bet on it.

This is basic information any experimenter should know. All engineers study thermo, whether they build bridges or integrated circuits. It's that basic.

This book is simply written and straight to the point. Here's the opening paragraph from chapter 1:

"What is thermodynamics? Very briefly, it is the study of energy and its transformations. We can also say immediately that all of thermodynamics is contained implicitly within two apparently simple statements called the First and Second Laws of Thermodynamics. If you know anything about these laws, you know that they have to do with energy—the first, explicitly, and the second, implicitly. The First Law says that energy is conserved. That's all: you don't get something for nothing. The Second Law says that even within the framework of conservation, you can't have it just any way you might like it. If you think things are going to be perfect, forget it...."

Chapters include: energy conservation, the concept of reversibility, heat engines, power plants, the second law of thermodynamics, more on the second law, and thermodynamics and statistical mechanics.

You get a brief book with some math, only a very little calculus. This is an introduction to a fascinating field of study. A complete study would include steam tables, but this little book doesn't get that far.

Learn what every scientist and engineer knows by instinct. Great little book. Excellent intro. Low cost. Get one. 5 1/2 x 8 1/2 softcover 103 pp

No. 5048

\$5.95

Bentley Engine!

BENTLEY BR2 - WW 1 Rotary Aero Engine

by L K Blackmore

The backcover tells the story better than I can:

"This book contains a detailed account of the building of the one quarter full size working model of the famous Bentley B.R. 2. aero engine which came into prominence in the closing stages of World War I. It represented a substantial improvement in both power output and reliability. It was the last of the rotary engines, in which the whole engine rotated around the crankshaft, which in turn was secured to the airframe."

The model of the B.R. 2. described in this book was the successful result of an attempt to restore the design of this historic engine. No drawings of the full size engine have been discovered, and very few examples of the full size engine exist. The original model, built by the Author, won a Gold Medal at the 1981 Model Engineer Exhibition at Wembley, and the Duke of Edinburgh Challenge Trophy at the 1982 Exhibition. Since then two other engines, built from the published drawings, have won Gold Medals at subsequent Exhibitions. Others are under construction."

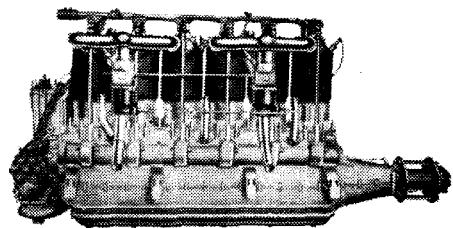
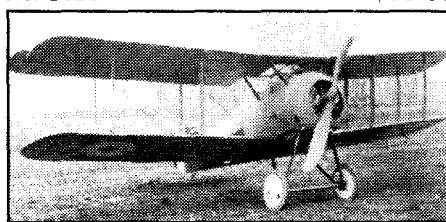
The great interest shown world wide in the Author's model led to the decision to publish a detailed description of the building, which includes all the fully dimensioned drawings, with over fifty accompanying photographs..."

The descriptive portion taken from the official Air Ministry Handbook has been reprinted in the Appendix, with the kind permission of the Ministry of Defence. This book itself is now extremely rare and was considered to be well worthwhile incorporating."

This incredible book first appeared in 1986 and was brought back by our friends at Camden Miniature Steam in England in late 1996. If you want to knock the socks off the competition, you should consider building one of these. Excellent book loaded with rare information. Get one. 8 1/2 x 11 paperback 96 pages

No. 1421

\$18.95



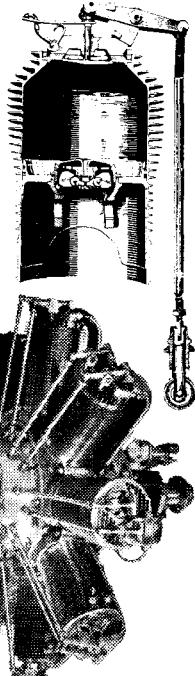
AEROPLANE ENGINES!

AIR BOARD TECHNICAL NOTES

reprinted by Camden Miniature Steam

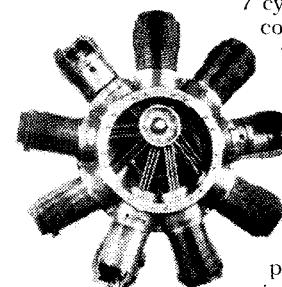
Air Board Tech Notes? Wah? This was published in 1917 to keep Britain's Royal Flying Corps and the Royal Naval Air Service in the air. These two flying circuses, by the way, later combined to become the Royal Air Force. This is the engine manual that technicians, not, re-pairmen, used to help them keep the engines running.

You get a brief few pages on engines in general followed by in-depth examinations of the 90Hp RAF 1a (an air cooled V8), the 120Hp Beardmore (a 6 cylinder inline), the 80Hp Gnome engine (a



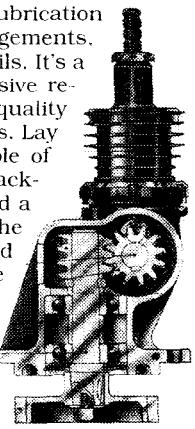
7 cylinder rotary air cooled), and three 9 cylinder air cooled engines: the 100Hp Monosoupape, the 80Hp LeRhone, and the 110Hp Clerget.

You get great photos and technical details on the



engines, fuel pumps, lubrication pumps, bearing arrangements, and other practical details. It's a small, somewhat expensive reprint, but certainly a quality one. So get a copy of this. Lay a ladder across a couple of cardboard boxes in the back-yard, put on goggles and a long scarf, and tell the neighbors you're a World War I ace. (Then run like hell when the guys with the straight-jacket show up...) 4 1/2 x 7 softcover approx 128 pages

No. 1447 \$13.95



Dave Gingery's Atkinson Cycle Engine

BUILDING THE
ATKINSON "CYCLE" ENGINE
by Vincent Gingery

Now here's an unusual engine you can build. Vince's description from the backcover tells the story:

"Build the rare and unusual Atkinson Engine from the 1880's. It had to be an unusual engine. After all, Atkinson was competing in the expanding small engine market against Nicholaus Otto's newly developed four-stroke engine. Otto held numerous patents that virtually eliminated all competition. To avoid infringement, Atkinson was forced to create a completely new approach to internal combustion. When you build his engine, you'll quickly appreciate how creative Atkinson was."

We have found that wherever we show this engine, people are amazed and fascinated by it. They ask... Where are the timing gears? What about a separate cam shaft? How does it run? How can it complete four cycles in a single revolution of the crankshaft? Are you sure it's not a two cycle engine?

We smile and explain that the secret lies in the unusual design of the crank linkage which, believe it or not, allows the exhaust, intake, compression and power strokes to be completed in one revolution of the crankshaft. The cams are located on the crankshaft eliminating the need for timing gears and cam shaft. Simplicity adds elegance to innovation.

Inside this book you get step-by-step instructions showing how to build an Atkinson "Cycle" engine designed and perfected by Jim Lewis. Castings are suggested for the base, flywheel, cylinder head and crank linkage, but none of these parts are so complex that they could not be made from stock mate-

rial. Other parts are readily available, and suppliers names and addresses are provided to make it even easier. A lathe, milling machine or milling attachment and other tools

All Four Cycles in One Revolution of the Crank!

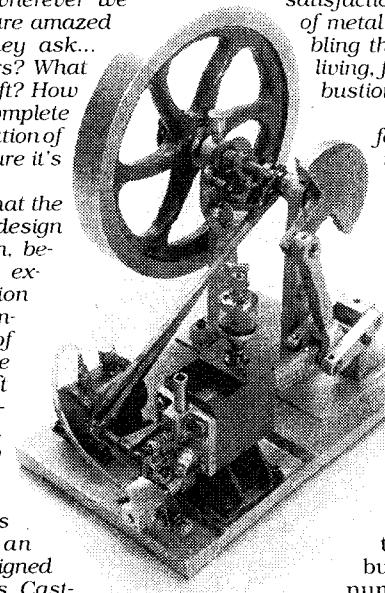
one would expect to need in a project of this type are required.

Building the Atkinson "Cycle" engine is well worth the time and trouble. You will discover that nothing quite compares with the satisfaction of machining inert pieces of metal into engine parts, assembling them, and then watching a living, fire-breathing internal combustion engine come to life.

You can be sure that very few people have a running version of an Atkinson engine, let alone one they can claim they built themselves. This engine will be something you can be proud of. You'll really enjoy showing it off to your friends."

You get the typical Gingery detailed drawings and text for making the patterns, machining the castings, and assembling the engine. I saw

the prototype run. Interesting engine, to say the least. And one you can build. This is the first of a number of Gingery engine books, so get a copy and build this while the others are being written. 8 1/2 x 11 softcover 94 pages No. 1400 \$15.95



BUILD A TWO CYLINDER STIRLING CYCLE ENGINE

by Dave Gingery

Dave Gingery's letters tell most of the story:

"Here are a couple of sketches of the new hot-air engine project... I've built a single cylinder engine of a similar design and it runs great. Practically no sound or vibration at about 1200 rpm... It is a great training project that should be appropriate for second and third year shop students...."

This is a free-style design with no practical application except as a demonstration engine. However, it is not a toy engine, and the builder will gain some valuable additions

to his tooling as well as acquire new skills...

Aluminum castings are a major portion and the remainder is made of common water pipe, drill rod, brass rod and ordinary hardware, fittings and sheet metal. A small lathe fitted with faceplate, chucks and ordinary

tooling will do the work. You will greatly expand your skill and you will end up with a mechanical marvel..."

Dave stopped by one time and fired up his prototype engine. From the outside ends of the opposing cylinders the engine is 11 1/2" long. When he fired up the alcohol burners, the engine sat there on my desk and silently started spinning. It was really something to see.

This is an external combustion engine but it does not use steam to carry the heat energy into the cylinders. Instead, it uses hot air. The engine was perfected by Rev.

You can watch this engine "run" on the Lindsay website.

<http://www.keynet.net/~lindsay>

Technical Details

The flywheel is an aluminum casting and weighs about 3 pounds. Its finished diameter is 8 3/4". The 7/16" crankshaft is held in place by two aluminum cast support pillars. The ignition points and condenser are from a late 1970's Ford V-8 engine.... An ignition cam mounted on the crankshaft opens and closes the points. The intake and exhaust cams are also mounted on the crankshaft.... The crankshaft bushings are lubricated by grease cups.

The drive linkage consists of the crank throw, the connecting rod, the piston rod, the pivot post and the pivot arms. The crank throw is made from 3/8" H.R.S. and is brazed to the end of the crankshaft.... The connecting rod is an aluminum casting and it pivots from the end of the crank.... The pivot arms are made from aluminum bar stock. The pivot bushing is lubricated with a grease cup and the piston rod is lubricated with oil by means of oil holes at the piston connection and the crank connection.

The piston measures 1 1/4" in diameter and is made from 1 3/8" aluminum round stock. The piston rings used are 1 1/4" and are made from cast iron. The cylinder is made from 1 1/2" cast iron round stock.

A water jacket is built around the cylinder and is constructed of 1/8" sheet steel. The water jacket is filled with antifreeze and helps keep the engine cool.

The cylinder head is an aluminum casting and is bolted to the end of the water jacket. It is drilled and tapped for a spark plug, valves, carburetor and exhaust.

The carburetor design is similar to those used on model airplanes and boats. The fuel flow is controlled independently by an adjustable needle valve. The air intake is controlled by an adjustable throttle barrel. The two are tied together so that when the throttle is opened the needle valve also opens slightly letting in more fuel for increased speed. The idle air mixture is also adjustable.

The gas tank is made from a short length of 2" diameter exhaust pipe... We use the same type of fuel to power the engine as is used in lanterns and camp stoves.

All of the components of the engine are mounted on a cast aluminum base measuring 10-5/8" x 7-1/8"....

Build Gingery's Stirling Engine

Two Cylinders - Easy to Build!

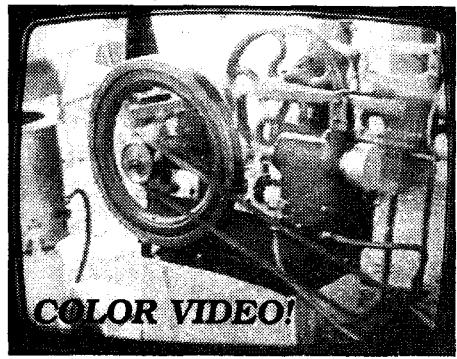
Robert Stirling in the early 1800's. John Ericsson, the Swedish-born engineer contributed substantial improvements to the engine.

"I've killed a disgusting number of hours watching it run."

This is the usual full-tilt Dave Gingery manual with all necessary illustrations and step-by-step how-to that has made his name a famous one among machine shop enthusiasts. (Engines have been built without using castings.) You get history, theory, drawings, photos, the whole thing. Another Gingery book! A "must have!" Order a copy today! 8 1/2 x 11 softcover 76 pages No. 1302 \$10.95

AN INTRODUCTION TO HOT AIR ENGINES by Bob Bailey

Ooh! Ahh! What a video! You'll see one hot air engine after another. And almost every one is running full tilt.



COLOR VIDEO!

Bob Bailey's Intro to Hot Air Engines

You'll see old engines like Stirling fan engines, Rider engines, Ericsson pumping engines, Bremen Silent engines (only 16 known to exist), a very rare 1902 Slocum, and many more. It's one engine after another - on and on and on.

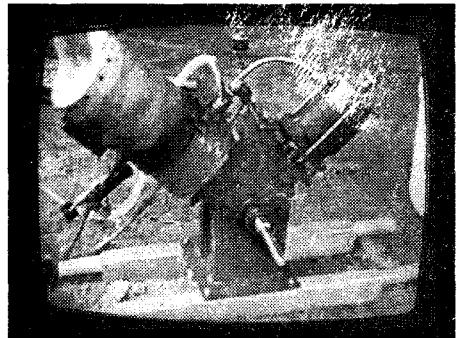
Just about the time you think the tape is over, Bailey takes you to Andy Ross's shop to see his 20cc gamma engine and a 90cc Stirling engine with magnetic coupling. These engines (some patented) can be seen in his book. But you MUST see them run. And you have to see the engine parts lying around Andy's shop. Amazing!

Visit with Ron Steele. He'll fire up a four cylinder engine and run it at 800 rpm at 800 F. Then he jacks up the temperature to 2000 F with a torch. That gives about 1500 rpm. When he pressurizes the engine with 20 psi, you have got to see what happens! He even takes the engine apart to show you what's inside.

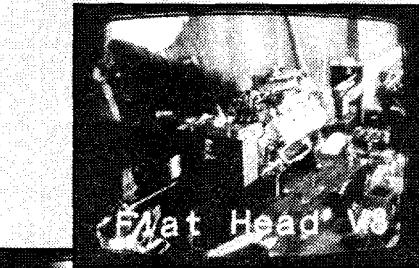
Bailey will take you to the big engine meets at Wyandotte MI and Lake Itasca MN to see incredible hot air engines, some restored, some models, and others of unique design. See a running liquid piston engine built by Neal James. See Ken McCabe's engine built from an auto air conditioning compressor. See some fantastic engines built by Ole Berge. And on and on it goes.

If you like engines, get this. If you want to feel like a raw beginner (no matter how skilled a machinist you are), get this. If you think hot air engines are wimpy, GET THIS!

Great stuff. About 80 minutes of wall-to-wall engines. VHS, NTSC format only. Get a copy. You won't be disappointed. Excellent! No. 1396 \$33.95



NAMES 1995 North American Model Engineering Society



1995 NAMES VIDEO

produced by Bob Bailey

Tour the North American Model Engineering Society's (NAMES) 1995 meet at Wyandotte MI. If you were there, this is what you saw.

You'll see models of 18 cylinder airplane engines, a huge DC-3 ocean freighter, sternwheelers, steam fire engines, merry-go-rounds, clocks, machine tools, Stirling engines, auto engines, stationary engines, and more than I can possibly describe here.

You have to see and hear some of the model engines run: a Model A Ford four cylinder, a '32 flathead V8, an Offenhauser, inline four cylinder aircraft engine, the radial aircraft engines, and more. You've got to see the footage of the red-hot pulse jet in operation, as well as the geared Shay under steam and the .22 caliber Gatling gun firing.

You'll examine tiny traction engines and puzzles that are part of the Sherline competition and the "Strictly IC" competition. You'll see a three dimensional mechanical trig computer, cannons, a rabbet plane the size of your thumb, an operational Stanley Steamer model, a working model LeBlond lathe, a radio control tank running up and down the aisles, a Garratt and an American locomotive, sawmills, walking dredge, donkey winch engines, and much more.

There is NO way I can get pictures off the TV screen and onto the page here. I can't capture the detail, the color, the motion and the sound. You have to see the tape.

At this meet you'll be amazed at the workmanship involved. You'll wonder what drove the builder to devote so much time to a single project. And then you'll cry when you realize that it can be done, but you haven't done it ...yet.

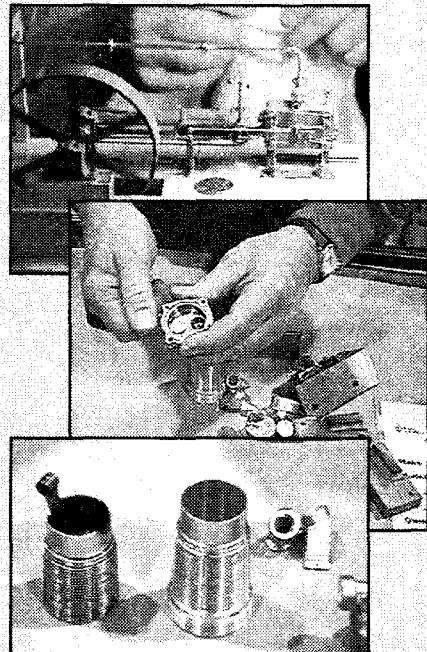
The NAMES convention is an exhibition you should see. If you can't be there in person, Bob Bailey will take you there. If you like to build things, you'll watch this tape many times. Impressive. Get a copy, about an hour VHS NTSC only

No. 1404

\$24.95

1996 NAMES VIDEO produced by Bob Bailey

Another exhibition. Another video. Interesting stuff. You'll see such things as wooden oscillating engines, gas tractors, trawlers, tugboats, and model riverboats, many heat engines including working low-delta T engines, and one built from wood & coffee cans. You'll see an absolutely incredible totally functional Corliss engine that could fit in the palm of your hand. It's more jewelry with its 300 tpi screws than machinery. Take a look at beautiful tethered racing cars from the 30's and 40's, and Kent Lund's collection of tethered racing boats including a world record holder at 51.52 mph in July 1940. You'll see engines of every shape and size.



Names 1996

Watch as an incredible tiny turret lathe turns down parts. Amazing! And you'll see model tanks, cannons, armoured vehicles, and Gatling guns. You'll see and hear running flathead Ford V-8's, patterns and castings in various stages of machining.

This tape is more or a less a continuation of the '95 tape and has far less narration. You'll hear mostly crowd noises and unmuffled exhaust blasts. What is really interesting at the very end is a short but fascinating explanation by one modeler himself on how he casted and machined the more difficult parts for the Bentley BR2 Aircraft Engine. You'll see castings with cores still in place, the jigs, the tooling, the patterns and core boxes. He'll explain the tricks he used to mass produce the cylinders so that each is identical to the next. And you must see the head needed for each cylinder. About 140 different operations were needed.

Interesting tape. Maybe not quite as good as the 1995 version, but excellent nevertheless. Inspiring! Get one. VHS NTSC only about 55 minutes

No. 1439

\$24.95

"Six Hundred Useful Receipts, Compositions and Formulas"

MACHINERY'S SHOP RECEIPTS reprinted by Lindsay Publications

On the title page you'll see "Six Hundred Useful Receipts, Compositions and Formulas Selected from MACHINERY'S Columns and Republished in a Classified, Pocketsize Edition, in Response to Repeated Requests from Friends Throughout the Mechanical Field"

This is a complete reprint of the first 1927 edition.

What you'll find here is not really a set of formulas but rather a collection of hints and tips that chosen to make a machinist's work easier and better. Most of the advice is still useful, although some of the alloys mentioned and such may be dated.

This is a great little book loaded with interesting and useful data and you'll find useful. Just one idea can be worth the cost of the entire book. (For that matter, just one great idea can be worth more than the cost of all of the books in this catalog!) Check this out. Consider it carefully. Put it on your list of books to order. Better yet, order it today. 4 1/2 x 6 softcover 266 pages

No. 20374

\$9.95

CONTENTS

- Shellac for Pipe Connections •White & Red Lead Mixture •To Cover Pulleys with Rubber
- Cement for Grinder Disks •Cementing Abrasive Cloth to Lapping-Wheel •Waterproof Cements for Glass •Cleaning Solution for Brass
- To Remove Hard Grease and Paint •Zinc Chloride Coating Solution •To Blacken Zinc for Laying Out •Silver Finish on Brass •Frosting Brass
- Solutions for Brass Heat-black Finish •To Bronze Yellow Brass •How to Blue Steel Screws
- Gun-metal Finish on Steel •Bronzing Fluid for Steel •To Imitate Casehardening •Lubricant for Thread Cutting •Lubricant for Tapping •Drilling Lubricants •To Remove Grease from Drawings
- Preparing Tracing Cloth for Inking •White Writing Fluid for Blueprints •Mounting Blueprints •Etching Solution for Steel •Animal Glue
- Veneer and Joint Glues •To Harden Drills for Cutting Glass •Effect of Quenching Baths
- Tempering Solution for High Heats •To Harden Fine Dies •Mixture for Hardening Spiral Springs
- Paste for Hardening High-speed Steel •Casehardening Cold Rolled Steel •Formula for Casehardening •Annealing Steel •To Harden Cast Iron •Graphite as Lubricant •Pickling Castings to Remove Scale •Aluminum Pickling Bath •Brass Polishing Solution •Paste Metal Polish •Rust Preventative •White Lead and Tallow •Solders for Gold •Solders for Copper, Brass and Lead •Fluxes for Soldering •Composition of Aluminum Solder •Spelters for Brazing •Cast Iron Brazing •Tinning Cast Iron •Tinning Wash for Brass Work •Copper-plating Cast Iron •Nickel-plating Brass and Copper •Copper-plating •Gold-plating •Black Varnish for Metals
- To Mix Lampblack and Shellac •Brilliant Whitewash •To Mend Broken Oilstones •Cutting Plate Glass •To Waterproof Leather •To Fireproof Wood in Shops •Steel Welding Compound •To Weld Spring Steel •Steel Seasoning Process •Recharging Permanent Magnets •To Punch Hard Rubber •To Cut Cork •To Cleanse Mercury •Re-inking Time-Clock Ribbons •and much more...

FLYWHEEL EXPLOSION!

News report from "Power and The Engineer Magazine" June 30, 1908

On May 23, at 8:30 p.m. occurred a disastrous fly-wheel explosion at the plant of the Nazareth Light and Power Company, located in the little town of Nazareth, Penn. The wheel was on a 300 horse-power Corliss engine, running at 85 revolutions per minute; and its breaking was attributed to the failure of the main pulley on the jack-shaft. This pulley was belted by a 23-inch belt to the flywheel which was 14 feet in diameter. Three 120 kilowatt generators were driven by separate belts from the jack shaft.

The driving pulley gave way without warning while pulling full load. Afterward, near the hub, an old shrinkage crack was found which had previously escaped inspection by being covered with grease. When the 36-inch pulley went to pieces, the belt, which ran close to the side of the engine, gave a lurch and caught the governor, tearing off one of the flyballs. The sudden release from its load and the destruction of the governor with 110 pounds boiler pressure was the cause of the runaway which followed. At the time of the explosion the speed of the wheel was estimated at 15,000 feet. An attendant pulled one of the steam cutoff attachments provided, but the wheel had already gathered too great a momentum. The flying fragments tore off the entire portion of the roof tangent to the wheel, and tore large holes through the walls; one piece, weighing about 600 pounds, was thrown 1500 feet in the direction of rotation. A large piece sheared off the entire cornice of a dwelling house near-by, but nobody was hurt.

The wheel was made in two sections, the flanges at the hub being bolted together with six 3-inch bolts. These were all sheared smoothly off and also the six 2-inch bolts in the flanges at the rim. There were six spokes in the wheel, and at the time of the writer's visit, three days after the wreck, only three had been found.

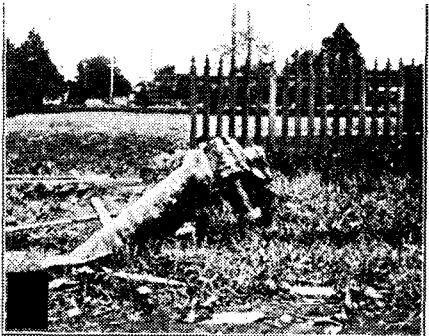
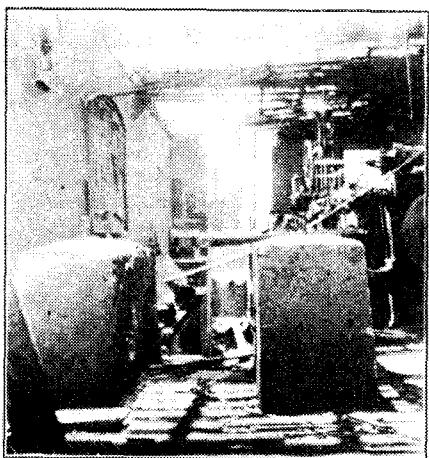
Fig. 1 is a view of the building from the south. The foundations of a small extension inclosing the fly-wheel are shown, the other part of the wall having been knocked over. In the center can be seen the crank-shaft, which was left entirely uninjured by the disruption of the flywheel. Among the splinters of the roof can be seen the main steam line which was also uninjured, although part of the asbestos covering was scraped off by flying pieces.

Fig. 2 is a view of the building from the north. Just out of sight in the foreground lies a piece of the fly-wheel comprising half of the hub, one spoke and a large portion of the rim and flange, evidently hurled through the roof.

Fig. 3 is an interior view, from the north, after the removal of part of the wreckage.

Fig. 4 is a view of portion of hub, a spoke and part of the rim and flange, the whole probably weighing from twelve to fifteen hundred pounds, and hurled 490 feet from the building.

Much of this information was obtained from J. A. Miller, president and general manager of the company, and it was under his management that temporary apparatus was installed and the plant put in operation 36 hours after the wreck.



Metal Working Techniques from the 1500's

THE PIROTECHNIA OF VANNOCIO BIRINGUCCIO

translated and edited by Smith & Grudi

"The Classic Sixteenth-Century Treatise on Metals and Metallurgy"

"Vannoccio Biringuccio was the Siennese metallurgist and armament maker who wrote history's first clear, comprehensive work on metallurgy. First published in 1540, shortly after Biringuccio's death, The Pirotechnia is a lavishly illustrated volume that describes in detail the equipment and processes of 16th-century mining, smelting and metalworking.

For centuries, this famous work has been a standard reference in the field of metals and metallurgy. It is especially valuable today as a vital source of information on the state of technology in the 15th and 16th centuries.

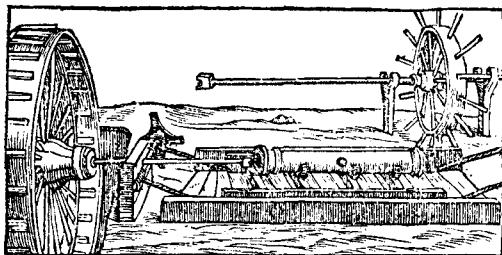
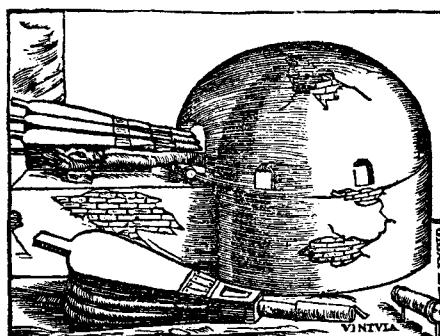


Figure 55. Machines for boring guns. The wheel at the left is a treadmill for two men, and that in the background is meant to be turned by hand.

The book first addresses the principal ores—gold, silver, copper, lead, tin and iron—and the making of steel and brass. It then introduces semiminerals, from quicksilver and sulphur to manganese and rock crystal, and describes the assaying and preparing of ores for smelting. Other topics include the making of alloys, the art of casting, methods of melting metals, and the making of fireworks.

This edition of *The Pirotechnia* has been reprinted from the authoritative translation published by The American Insti-

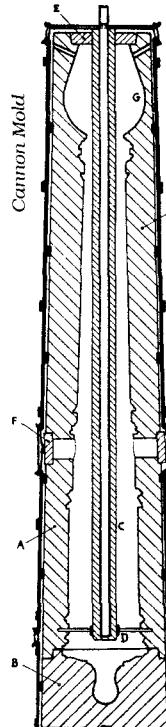


tute of Mining and Metallurgical Engineers, and is complete with an historical introduction to Biringuccio and his work. It also contains reproductions of the 94 woodcuts from the original 1540 edition, which depict centuries-old technologies ranging from the recovery of mercury with a distilling bell to a machine for boring guns..."

Chapters include minerals, semi-minerals, assaying, separation of gold from silver, alloys, art of casting, methods of melting metals, small art of casting, procedures of various works of fire (goldsmithing, coppersmithing, distillation, making wire, potter's art, etc), and procedures for making fireworks to be used in warfare.

Great, old, and very dangerous technology. Fascinating reading. Get a copy. 6x9 softcover 507 pages

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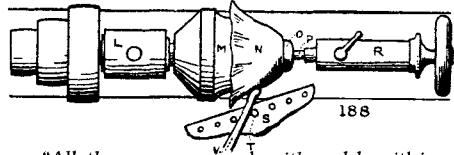


Metalworking & Enameling

METALWORKING AND ENAMELLING

by Herbert Maryon

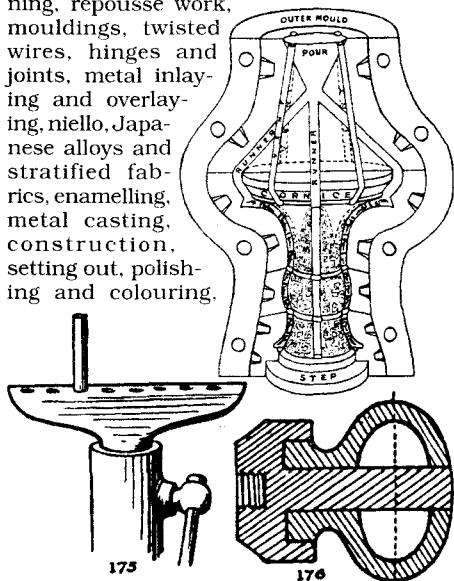
"A practical treatise on gold and silversmiths' work and their allied crafts."



"All those concerned with goldsmithing, silversmithing, rare metal objects or metal scientific instruments, or their repair or restoration, will be delighted to find this bible of their craft available again in a new edition."



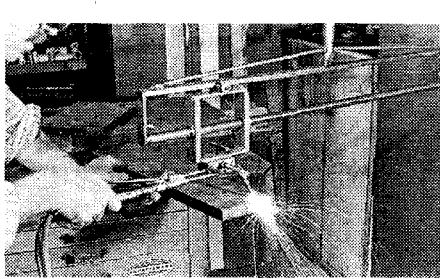
Chapters include materials and tools, soldering, filigree and other small work, setting of stones, raising and shaping, spinning, repoussé work, mouldings, twisted wires, hinges and joints, metal inlaying and overlaying, niello, Japanese alloys and stratified fabrics, enamelling, metal casting, construction, setting out, polishing and colouring.



the making and sharpening of tools, design, Benvenuto Cellini, assaying and hallmarking, and tables and appendices.

Think of this as fine art metalworking. Even if you're a blacksmith pounding red hot metal, there's something in here, I'll bet, that you can use. It's loaded with practical how-to, and fairly well illustrated. A lot of book for the money. 5 1/2 x 8 1/2 softcover 335 pp 1959 original

No. 1288 \$8.95



drawn plans, great how-to and lots of photos. Great addition to the well-equipped shop. 7 x 9 booklet, 20 pages.

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Prices Change!

Because of escalating paper prices, book prices are changing rapidly. Some prices in this catalog may have changed before the ink was dry! Don't be surprised.

Fred Colvin Remembers



60 YEARS WITH MEN AND MACHINES

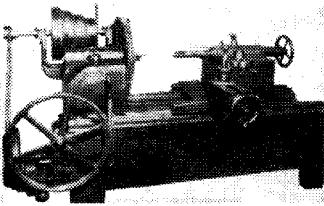
by Fred H. Colvin
reprinted by Lindsay Publications

"Mr. Machine Shop" was 79 when he wrote this, his final book. He figured by that time in 1947 he had written over 7 million words for publication both in *American Machinist* magazine and in his own books. Colvin started his machine shop apprenticeship in July 1883 and ended up as editor of

American Machinist magazine.

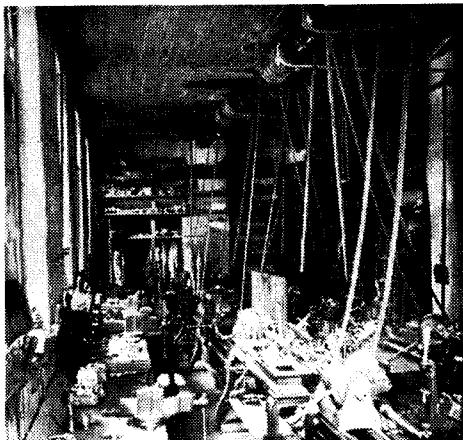
Chapters include The Machine That Can Reproduce Itself, In the Beginning Was the Belt Drive, Giving the Machine a Voice, A Society Sponsors the Machine, High-wheeler and High Iron, Natural History of the Automobile, I Join the American Machinist, From Maxim to the Jet Plane, Machine Tools and the First World War, Tour of the World in Eighty Days, Machine Tools and Global Warfare, and finally, Past, Present and Future.

You'll find this volume to be filled with personal memories of



(right) Rue Mfg Shops in Philadelphia about 1888 where Fred Colvin (below left) started out (far left) chain feed lathe from the 1840's

famous men and incredible machines and how they created the world we know today — from the



Columbian Exposition of 1893 to the jet fighters of World War II. You'll find photos of Starrett, Hartness, and other greats, locomotives, machine tools, the Wright brother's engine, the Maxim machine gun and much, much more.

This is like sitting on your great grandfather's knee and listening to his old machine shop stories. It's fun reading. You'll read it and reread it. Get a copy.

5 1/2 x 8 1/2 softcover 297 pages

No. 4864

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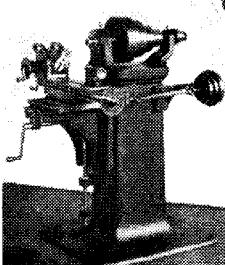
Frank Stanley
about 1925

Machine Tool Inventors!

ENGLISH & AMERICAN TOOL BUILDERS
by Joseph Wickham Roe
reprinted by Lindsay Publications Inc

Do you really know who Mr. Pratt and Mr. Whitney were? Or Mr. Brown and Mr. Sharpe? Or Colt, Maudslay, or Whitworth? The answers are here.

Meet the men who invented and perfected machine tools. You'll read about and see French lathes from the 1770's, Wilkinson's boring machine, Samuel Bentham, Brunel and his shaper, Maudslay and his screw cutting machine. Discover a French screw cutting lathe from the 1500's! Also covered are



(above) Brown & Sharpe micrometer from 1877
(right) first universal milling machine 1862 (below right) Nasmyth's sketch of the steam hammer
(below) Maudslay screw-cutting lathe about 1800

fascinating details of the careers and the inventions of Joseph Whitworth, Eli Whitney, Blanchard and his gun stocking lathe, Samuel Colt and his armory, Root's chucking lathe, Francis

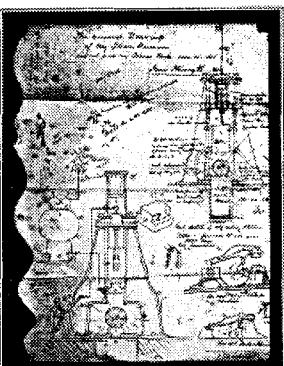
Pratt, Amos Whitney, Frederick Howe, James Hartness, and others.

If you're just a dummy who just wants to beat a piece of metal with a hammer, then skip this. But if you consider yourself a knowledge machinist, you should at least know who these people are. After all, they invented the tools you use. Any machinist who takes pride in his knowledge and skill will want to read this fascinating 1916 classic.

Meet some of the most talented machinists who ever lived. Great reading. Entertaining. Get a copy. Top recommendation!

5 1/2 x 8 1/2 softcover 416 pages
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\$17.95

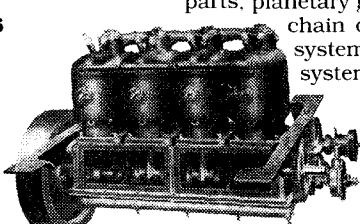
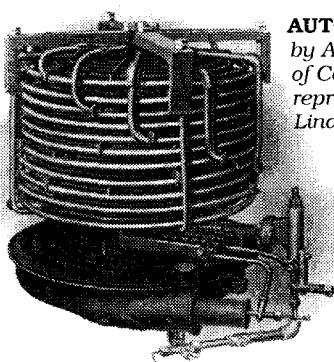


Ancient Automobiles

AUTOMOBILES 1906
by American School
of Correspondence
reprinted by
Lindsay Publications

This is a well-illustrated, fun-to-read book about early autos from a five hp 1906 Runabout to steam autos.

You'll see photos and drawings of early four-cylinder air-cooled engines, flimsy

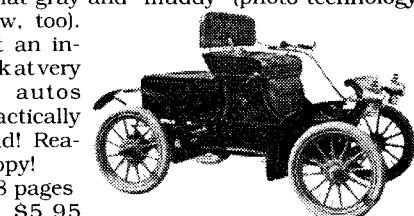


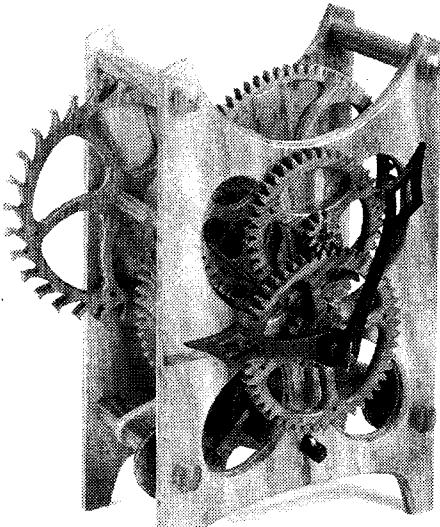
unbalanced crankshafts with enormous flywheels, a gasoline engine with revolving cylinders, unusual carburetors, Frayer-Miller engine parts, planetary gear transmissions, variable speed friction drives, chain drive systems, steering wheel and steering lever systems, brakes, tires, spark coil and magneto ignition systems, bodies, the Marmon V-4 air cooled engine, shock absorbers, and more.

The photographs in this early book are somewhat gray and "muddy" (photo technology was new, too).

You get an inside look at very early autos when autos were still practically experimental. Fun to read! Reasonably priced. Order a copy!

5 1/2 x 8 1/2 softcover 88 pages
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A Wooden Clock!?

SMALL WOODWORKING PROJECTS

The Best of Fine Wood Working Magazine

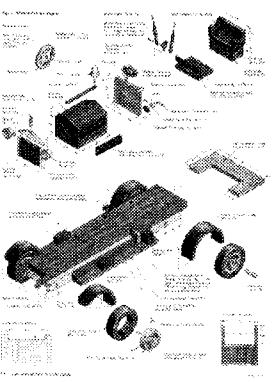
Woodworking in a metal catalog? Yup. Aah seeen this wooden clock on the cover and the incredible color plans inside and thought this would make a great project... especially when done in metal. In fact the clock gears are shown being milled from wood on a metal lathe.

It looks like a neat clock with seven gearwheels, the largest 6 13/16" in diameter, with a 3' pendulum. It supposedly keeps time to within a few seconds per day.

And there are other small projects that you can make from wood and perhaps some (with imagination) from metal. Make a fireplace bellows for your foundry. Make a walnut lap desk, river whistles and cane flutes, boxes from burls, wooden spoons, wooden shoes, bowls,

pepper mills, a pool cue, jigsaw puzzles and even a sliding top box for your nitroglycerine, tranquilizers, snuff or illicit Cuban cigars. And more.

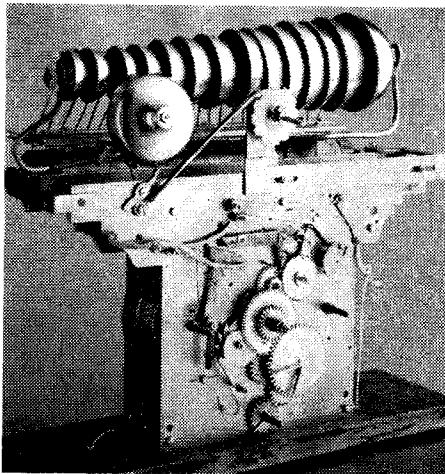
You'll learn how to laminate wood to produce beautiful turnings, bend wood to make snowshoes, make toy trucks and marble chase games, and more. (My first love is the clock.)



Great projects. Lots of color, plans, and fun. Well worth the price. Get a copy, and get going. 9x12 softcover 127 pages

No. 5032

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STRIKING AND CHIMING CLOCKS THEIR WORKING AND REPAIR

by Eric Smith

"...Striking and chiming clocks are a common enough sight in homes....

CLEAN YOUR CLOCK!

A growing number of enthusiasts are keen to learn about the repair and restoration of these beautiful pieces, and it is to them that this much-needed workshop manual is addressed..."

"Expert clock-repairer Eric Smith offers detailed notes on the principal mechanisms involved, along with plenty of practical advice which both amateur and professional restorers will find invaluable. He focuses in particular on the all-important sounding systems, aware that a full understanding here will help to improve efficient handling of the other mechanisms. His comprehensive instruction also explains repair and setting up, and outlines the common variations amongst models. Throughout, the author concentrates on the medium-priced and inexpensive clocks which are most likely to turn up for repair..."

Chapters include elements of sounding mechanisms, striking and chiming gear trains, countwheel striking, rack striking, countwheel chiming, rack chiming, repair of individual parts, setting up and adjusting, correcting faults, and appendix.

You can make a clock that keeps some semblance of time from a plank and a pocket knife. When you start looking at more precise time pieces, you discover fascinating machines. When you move into the world of chronometers and chiming clocks, you move into the arena of incredible mechanisms. This book is about the latter. Nicely illustrated. Excellent book. From England. Worth having. 6 1/2 x 10 hardcover 192 pages

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The Art of Engraving!

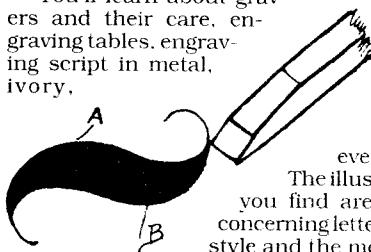
THE ART OF ENGRAVING

reprinted by Lindsay Publications

Originally copyrighted in 1903 by the owner of *The Keystone*, a magazine published for the jewelry and optical trade in Philadelphia, this unusual book teaches beginners how to get started using gravers to cut beautiful designs and letters into metal.

Chapters include mechanical drawing, tools and materials for beginners, first exercises, block letters, methods of cutting block letters, script letters, cutting lower-case script letters, the formation of script capitals, looped script, practical use of script letters, engraving coffin plates, engraving thimbles and inside of rings, engraving inscriptions in script, method of cutting Old English, shaded Old English, engraving spoon handles, designing and engraving ciphers, flower leaf ciphers and more!

You'll learn about gravers and their care, engraving tables, engraving script in metal, ivory,



and even pearl. The illustrations you find are mostly concerning letters, their style and the method in which they should be cut.

What you learn here are the secrets that went into engraving so many of the fantastic trophies, jewelry, and trinkets that we find in museums and antique stores (at big prices!). It was all done by hand.

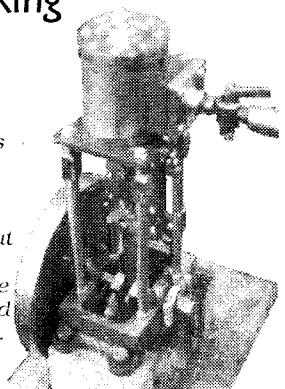
This is a technique that many people are still trying to learn. It is definitely an art, a skill, and not a machine shop technique. If you're into making knives, guns, spinning metal, creating jewelry or any type of decorative art, this is a rare book worth having. Get yourself a copy and put it in your reference library today! 5 1/2 x 8 1/2 softcover 199 pages

No. 20617

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Hasluck's Engine built from plans in Hasluck's Metalworking

Lindsay-
Here is the
1/4 hp Vertical
Steam Engine I
made from plans
in Hasluck's
Metalworking. It
was on the test
stand before I put
the governor on.
Runs great. Have
it all finished and
on walnut stand.



Bob Jorgensen

815/935-5353

SOLDERING & BRAZING

SOLDERING AND BRAZING

by Raymond Francis Yates
reprinted by Lindsay Publications

"...Includes a Multitude of Soldering Kinks, Gives Design and Construction of Electric Soldering Coppers and Heating Devices. A Practical Hand-book for Everyone Interested in the Process of Soldering and Brazing"

This small book is broken into five parts: soft soldering, hard soldering and brazing, brazing, heating devices, and soldering notes. Within these five sections are numerous topics including electric heater for soldering fluxes, homemade electric soldering copper, method of soldering tin, galvanized iron, zinc, aluminum and lead pipes. You'll learn

about blowpipe silver soldering, brazing spelter and much more. This book talks about old ways of joining metal but not about safety. You have to add that.

This is one of those neat little books from the 20's

that are fun to have and read even if they are a little dated! Get a copy. You'll like it.
5 1/2 x 8 1/2 paperback 90 pages
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Coppersmithing!

ART OF COPPERSMITHING

Practical Treatise of Working Sheet Copper into All Forms

by John Fuller

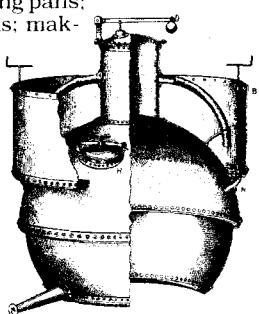
Build me a copper brew kettle to cook my beer. Or a sand dome for my locomotive. Or a fish kettle. Here from 1893 you get one of the best copper working books you're going to find.

Chapters include historical sketch of copper; light coppersmithing; repairing and tinning; boy's second year; making washing coppers, making small brewing coppers; table of dimensions and capacity; making hand bowls; making frying pans; making closet pans; making water balls; mounting for copper goods; glue pots and teakettles; oval teakettles; beer mullers; funnels; coffee pots; saucepans and pudding pots; stewpans; stock pots; fish kettles; brazing pans; tea boilers; warming pans; preserving pans, dripping pans, and much, much more.

Great book. 474 illustrations. Somewhat expensive, but it delivers quality. I think you'll like it. Get one. 6x9 softcover 327 pages

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CLASSIC 1882 WATCHMAKER'S HANDBOOK

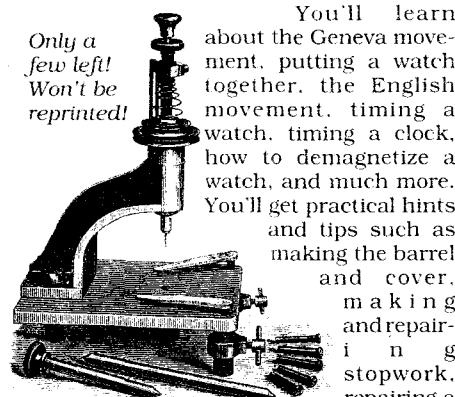
WATCHMAKERS' HAND-BOOK

by Claudius Saunier
reprinted by Lindsay Publications

Saunier's beautiful 1882 handbook is divided into six parts: geometry and measurement, materials used in horology, health and manipulation, tools and appliances, repairing and examining watches, and practical receipts.

Within each part are numerous short "chapters" that will teach you a particular skill such as tempering steel, bronzing, polishing brass wheels, use of a file, use of a graver, and more. You'll be introduced to all the tools a watchmaker could want: files, pliers, the lathe, Boley turns, chucks, ferrules, chamfering tools, stud tools, dividing plate, screw-plates and taps, mill cutters and much more.

Only a few left!
Won't be reprinted!

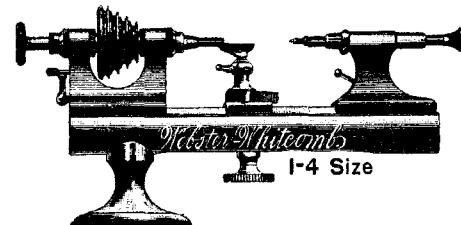


You'll learn about the Geneva movement, putting a watch together, the English movement, timing a watch, timing a clock, how to demagnetize a watch, and much more. You'll get practical hints and tips such as making the barrel and cover, making and repairing a stopwork, repairing a barrel arbor, adjusting a fusee, polishing pinion leaves, and more. You'll get discussions on pivots, escapements, pallets, enamel dials and their fabrication, hands, glasses and much more.

Although this will not tell you how to build a watch step-by-step, it will teach you all the basic skills and tricks of the trade. It is an old time watchmaker's reference for problem solving. If you are fascinated by watches and clocks, then you'll certainly want a copy of this almost impossible-to-find book. The rest of us can learn precision techniques and finesse that will never be found in the blacksmith shop.

This is a fun book to read. You'll find a surprising number of great old engravings of tools and machinery. Get one and enjoy it. 5 1/2 x 8 1/2 softcover 482 pages plus 26 additional pages of mechanical drawings
No. 21184

\$22.95



Workshop Notes!

WORKSHOP NOTES

FOR JEWELERS & WATCHMAKERS

from Jewelers's Circular Publishing
reprinted by Lindsay Publications

The Jeweler's Circular had been published for 22 years when this reprint appeared in 1892. And it's a "neat" book (as a certified gen-u-wine nerd would say... and that's you and me, son...).

You get, primarily, hints and tips extracted from the periodical. You get info on time-pieces which I think are amazing machines, but you also get unusual tips on metalworking in general. All of it being unusual.

There are no chapters. All the articles are run together. Topics, naturally, are those of use to jewelers and watchmakers. These are trade secrets, plain ol' usable information. If you're wanting to make a replica of Big Ben, forget it.

You get countless articles short and long with titles like the Breguet spring, practical method for lengthening a balance spring, wood rod and lead bob for pendulum, a good way to clean a mainspring, the rounding-up tool, scape wheels of swiss watches, handsome frosting of wheels etc., new method of hardening delicate steel parts, to repair a pinion, to make a whetstone, hardening gold springs, the knack of pivoting, hand turning in watch work, gold and its treatment in smelting and rolling, dissolving and precipitating gold, lapping, acid coloring, electro fire-gilding and silvering, the art of enameling, to cast in fishbone, silver solders - their uses and applications, resilvering brass clock dials, solder for aluminum, artificial gold, etching on glass and metal, the pendulum and its laws of oscillation and much, much more.

My only criticism is that there are no pictures. So if you can't read, you aren't going to learn much. There are a few eye-popping ads in the back with a few pictures, but that's about all.

A really interesting collection of useful information written by and for people who needed it. Consider it carefully. Not something you're going to find everyday. Get one. 7x10 softcover 220 pages

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HARDCOVER EDITION

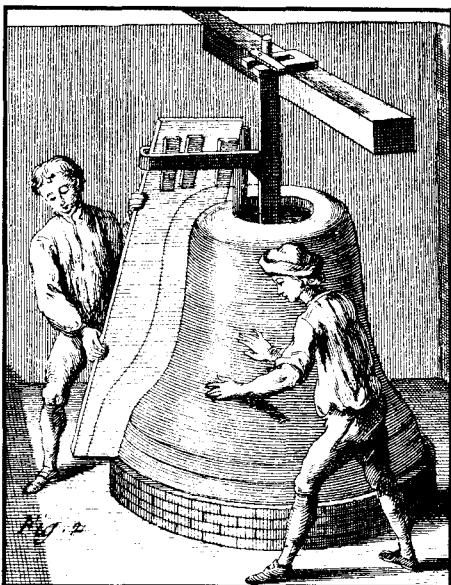
Case-bound edition. Only a few. While they last.

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59



WATCH AND CLOCK ESCAPEMENTS

from The Keystone Magazine
reprinted by Lindsay Publications

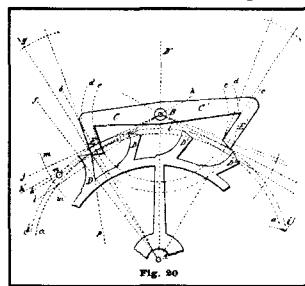
"A complete study in theory and practice of the lever cylinder and chronometer escapements, together with a brief account of the origin and evolution of the escapement in horology."

watch & clock escapements

Back at the turn of the last century horologists (watchmakers) were so impressed with a series of articles that appeared in The Keystone, they begged the editors to reprint them as a book. The three original articles together with two new chapters illustrated with almost 200 drawings were released in 1904.

Here you get: the detached lever escapement, the cylinder escapement, the chronometer escapement, history of escapements and putting in a new cylinder.

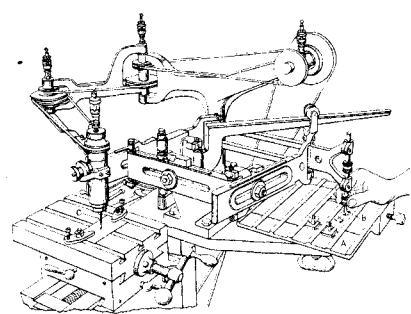
What makes this book so great is that it is all "meat". Here are secrets, hints & tips and warnings from people who were building clocks and watches for people doing the same. Get yourself a straight edge and compass and learn how to layout escape-wheel teeth in nitty-gritty detail. Or learn how to make your own drawing instruments. Or delineate (layout) circular pallets. Or a club-tooth lever with equidistant locking faces. Learn how to set a jewel pin properly. How to identify a quality setter. Or how to make and use a device to measure angular motion in your wheels.



Within each section are fascinating details on how to make an escapement matching tool, drawing a cylinder escapement and making a working model, secrets of detent springs and tangential locking in chronometers, and more.

You are not shown how to build a clock. You're expected to know how to do that. This is about the secrets that go beyond the basics. Things you need to know to make quality timepieces.

One lung engines may be fun to build and run, but watch movements are like fine wines. And if you're a member of that group of special people who intensely appreciate precision workmanship this is something you should have. One of the best horology books I've stumbled across. My type of book: complex but practical. Way beyond the simple stuff you find in most books. Excellent. Get a copy. 5 1/2 x 8 1/2 paperback 179 pages No. 21907 \$12.95



Graduating & Engraving!

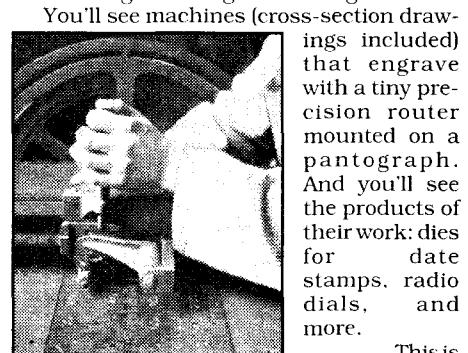
GRADUATING ENGRAVING & ETCHING

Machinery's Blue Books
reprinted by Lindsay Publications

"A treatise on the machines and methods employed for graduating straight and circular scales and engraving various forms of nameplates, by etching and cutting processes."

Here, the 1921 secrets of engraving are revealed.

Chapters include graduating machines and their use, engraving machines and methods and etching and etching fluids. Within these chapters you'll see power-driven linear engraving engines, circular engines, a circular graduating machine used to put scales on astronomical instruments, machines that graduate numerous rules simultaneously, graduating with a pantograph and even a fixture for graduating in a milling machine.



You'll see machines (cross-section drawings included) that engrave with a tiny precision router mounted on a pantograph. And you'll see the products of their work: dies for date stamps, radio dials, and more.

This is a small, informative booklet that is loaded with fascinating info. Imagine how much more professional your machines could be if they sported professionally graduated scales? And not surprisingly, variations of the techniques revealed were used to cut the dies used to cast the type with which the original booklet was printed!

Small, well illustrated, low cost. So get a copy. (And I won't take NO for answer.) 5 1/2 x 8 1/2 softcover 60 pages No. 21788 \$5.95

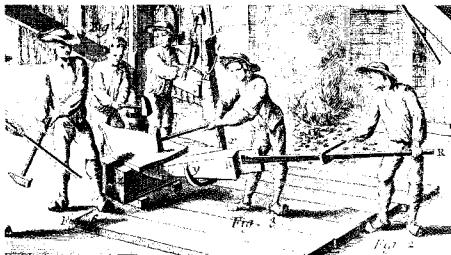
Craftsmanship

THE COLONIAL CRAFTSMAN

by Carl Bridenbaugh

From the backcover:

"In colonial America, craftsmen comprised the largest segment of the population, after farmers. They were cabinetmakers, silversmiths, pewterers, printers, painters, engravers, blacksmiths, brass button-makers, shipwrights, hatters, shoemakers and other artisans, and they manufactured the tools, clothing, household goods and other essential products needed to sustain life and trade in the New World."



"In this superb study, a distinguished American historian examines the lives and work of American craftsmen in the years before the Revolution—the golden age of colonial craftsmanship—showing them at work, at play, at worship, at school, at home, competing in their trades, striving to get ahead and playing a dynamic role as citizens in bringing about American independence."

"Natural resources, special crafts of the different colonies and New World 'marketing' of those crafts are closely studied. Students of American history, culture and the arts and crafts will find this a richly rewarding study—authoritative, well-researched and highly readable. It is further enhanced with carefully chosen illustrations..."

With this you can imagine yourself as a bell founder or button maker and see what kind of a life you might have had a couple of hundred years ago. Interesting reading. Consider it carefully. 5 1/2 x 8 1/2 softcover 240 pp
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507 MECHANICAL MOVEMENTS

by Henry T. Brown
reprinted by Lindsay Publications

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You'll find each left-hand page carries nine illustrations, and each right-hand page presents brief descriptions of their operation. Some of the movements are trivial, but others are quite unusual and interesting. In some cases you'll find that these movements were popular at one time, but are no longer used. Discover Fairbairns' balling-scoop, Anderson's gyroscopic steam engine governor, or Clayton's sliding journal-box.

If you design machines, this can be very useful to you as practical how-to info. Design and build table-top demonstrations of these movements. Great project ideas! At the very least you'll find this a great book to browse through on a rainy afternoon. Very interesting. 6x7 softcover 128 pages

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Mechanisms!

MAKING MECHANICAL MARVELS IN WOOD

by Raymond Levy

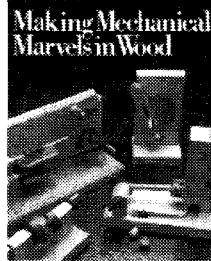
You get plans, instructions and illustrations to build a cam and follower, the eccentric, the Scotch yoke, the fast-return actuator, a self-conjugate cam, a stationary steam engine, a single-part mechanism, couplings, Watt's sun-and-planet motion, the Geneva wheel, and several others.

Each is a hard-wood demonstration of a basic mechanical movement that can be quite a conversation piece. How about making these devices from metal? Or, How about making patterns and selling castings as kits?

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Making Mechanical Marvels in Wood

MAKING AND MODIFYING MACHINES

articles from Fine Woodworking Magazine

You get reprints of 29 different articles on

making and adapting machines for woodwork-ing. But with a little imagination, you might be able to adapt them to metal working machines in some cases.

Make & Modify MACHINES

Articles include chainsaw lumbermaking, a wooden table saw, shop-built panel saw, shop-built sliding table, building a walking-beam saw, treadle band saw, radial saw meets computer, wooden jointer, a sanding-disc jointer, a low-tech thickness sander, an abrasive planer, a disc sander, inflatable drum sander, wooden-drum stroke sander, a swing-away drill-press table, an oscillating spindle sander, making shaper knives, shaper cutters and fences, custom shapers for period moldings, horizontal boring machine, making a router table, the router rail, miniatures by machine, shop-built sharpener, treadle lathe, freewheel lathe drive, a shop-made bowl lathe and others.

You get great ideas, plans, and operating tips. I like the conversion of a garbage disposal into a water-cooled grinder for sharpening wood chisels. Could that be adapted to grind lathe tools and millers? The wooden jointer and table saw are certainly nothing to laugh at. And the treadle wood lathe is a beauty!

Excellent book. Yes, it's woodworking, but any do-it-yourself machine freak should find it interesting and useful. That's you, isn't it? Well, then order a copy. Lot's of plans for a very reasonable cost. Get one. 5 1/2 x 8 1/2 softcover 140 pages

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COPPER WORK

by Augustus F. Rose

reprinted by Lindsay Publications

A 1908 manual for high school students. Some of the projects are very simple, but others are challenging. You'll learn what types of saws, hammers, and anvils to use. You'll learn how to make simple objects such as hinges and finger pulls, and then you'll graduate to box corners.

The fun starts when you anneal a sheet of copper and start working it on an anvil to produce a pitcher, porringer, bowel, ink pot, or a spoon. You'll learn how to make rivets, draw wire and small tubing, polish, make a stamp out of tool steel, and even some simple enameling.

This book is designed for young people who are to be assisted by a teacher. The

Wooden Mechanisms

Make 'em from metal!

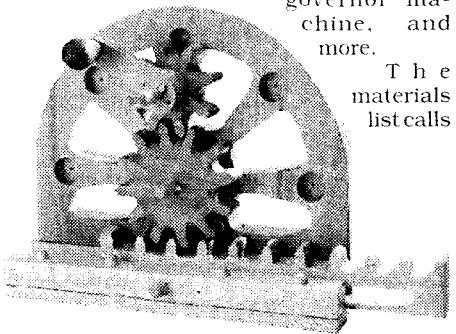
MAKING WOODEN MECHANICAL MODELS

by Allan & Gill Bridgewater

What you get are plans and how-to that enables you to build fifteen different mechanisms from wood.

Here's a reciprocating engine, an oil pump-ing rig, a centrifugal impeller pump, wheel bearing machine, a combustion engine, a cam and fork engine, a flywheel propeller machine, a rack and pinion machine, a pendulum recoil escapement, a flywheel and governor ma-chine, and more.

The materials list calls



for beech, cherry, walnut and other quality wood. Skills like laminating, tenon wedging, pegging, and whittling are needed. Building wooden models in itself sounds like fun. But metalworkers should always consider the wooden model as merely a pattern from which a sand mold is fabricated and castings poured. Then a lathe, milling machine and drill press is can be used to assemble the machine. Instead of a linseed oil finish, you might consider polishing the aluminum casting to a mirror finish.

Fire up your gray matter. Interesting book. Excellent illustrations, plans, and above, all ideas. Get one. 8 1/2 x 11 softcover 144 pages 341 illustrations

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Work Copper!

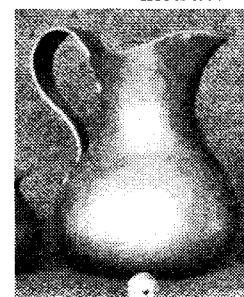
instructions are therefore brief, maybe even too brief, and the illustrations numerous. But I expect that you have at least a little mechanical ability, so you shouldn't need extremely detailed instructions anyway. Many pages are covered entirely with photos and/or drawings to instruct and inspire.

I won't tell you this is the greatest book ever written, but it is a lot of book for a modest price. It's just for the fun of it.

Or perhaps you can turn out a product to sell at arts & crafts shows. No matter what your angle, I think you'll like this. Order a copy. 5 1/2 x 8 1/2 softcover 123 pages

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by Chas. A. Strelinger & Co.
reprinted by Lindsay Publications

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